

# MAFELAP 2016, Tue 14–Fri 17 June 2016, Programme

## One page summary

### Tuesday 14th June

09:30– HWLL001: Opening by the Vice Chancellor Julia Buckingham, 09:45 Mark Ainsworth, 11:00 James Belak, 11:45 Jaime Peraire.

12:30–14:00 Lunch in the Newton and Darwin rooms in the Hamilton Centre.

14:00–16:05 Mini-symposium sessions in rooms LECT061/2/3/4/5/6/7/8, LECT261 and HWLL001.

16:45–18:00 Eastern Gateway Auditorium: 50 Years of Engineering Research at Brunel by Geoff Rodgers followed by the Oden lecture by J. Tinsley Oden.

18:00–20:00 ESGW foyer, ESGW003/003a Reception and displays.

20:00 Supper in the Newton and Mead /Cavendish rooms in the Hamilton Centre

### Wednesday 15th June

08:30–10:10 Mini-symposium sessions in rooms LECT061/2/3/4/5/6/7/8, LECT261 and HWLL001.

10:35–11:50 Mini-symposium sessions in rooms LECT061/2/3/4/5/6/7/8, LECT261 and HWLL001.

12:00 HWLL001: Ferdinando Auricchio.

12:50–14:00 Lunch in the Newton and Darwin rooms in the Hamilton Centre.

14:00–15:40 Mini-symposium sessions in rooms LECT061/2/3/4/5/6/7/8, LECT261 and HWLL001.

16:10–17:50 Mini-symposium sessions in rooms LECT061/2/3/4/5/6/7/8, LECT261 and HWLL001.

18:10 HWLL001: The Babuška lecture by Douglas Arnold.

19:30 Dinner in the Newton and Mead /Cavendish rooms in the Hamilton Centre.

### Thursday 16th June

08:30–10:35 Mini-symposium sessions in rooms LECT061/2/3/4/5/6/7/8, LECT261 and HWLL001.

HWLL001: 11:00 Jan Hestavan, 11:45 Barbara Wohlmuth.

12:30–14:00 Lunch in the Newton and Darwin rooms in the Hamilton Centre.

14:00–15:40 Mini-symposium sessions in rooms LECT061/2/3/4/5/6/7/8, LECT261 and HWLL001.

16:10–18:15 Mini-symposium sessions in rooms LECT061/2/3/4/5/6/7/8, LECT261 and HWLL001.

19:00 onwards Pre-Dinner drinks in Mead and Cavendish rooms in the Hamilton centre followed by the conference dinner.

### Friday 17th June

08:30–10:35 Mini-symposium sessions in rooms LECT061/2/3/4/5/6/7/8, LECT261 and HWLL001.

11:00– HWLL001: 11:00 The Zienkiewicz lecture by Rade Vignjevic, 11:45 Spencer Sherwin.

12:30–14:00 Lunch in the Newton and Darwin rooms in the Hamilton Centre.

14:00–16:05 Mini-symposium sessions in room LECT061/2/3/4/5/6/7/8, LECT261 and HWLL001.

## Tuesday 14th June

**Tue 09:30–09:40 in HWLL001: Opening: Vice Chancellor, Julia Buckingham**

Chair: **Matthias Maischak**

Tue 09:45–10:30 in HWLL001

**High order finite elements: mathematician's  
playground or practical engineering tool?**

**Mark Ainsworth**

Tue 10:30–11:00: COFFEE in HWLL002 and HWLL004 (Howell building)

Tue 11:00–11:45 in HWLL001

**Preparing for the Future of Computing:  
Bridging Scales within the Exascale  
Materials Co-design Center**

**James Belak**

Tue 11:45–12:30 in HWLL001

**Computational Photonics**

**Jaime Peraire**

Tue 12:30–14:00: LUNCH in the Newton and Darwin Rooms in the Hamilton Centre

Time	A: LECT061 Praetorius/ Vohralik ms: A posteriori error est. . .	B: LECT062 Georgoulis/ Wihler ms: Nonlinear Evolution. . .	C: LECT063 Engström/ Giani/ Grubišić/ Ovall ms: Eigenvalue. . .	D: LECT064 Ryan ms: Accuracy enhancement DGM	E: LECT065 Gong/Xie/Zhang  ms: Efficient computing. . .
TU 1400	Peterseim, D	Karakashian, O	Nigam, N	Peters, J	Chen, L
TU 1425	Smears, I	Jensen, M	Gallistl, D	Docampo Sánchez, J	Di, Y
TU 1450	Riedlbeck, R	Katsaounis, T	Guermond, J	Kirby, R	Xu, Y
TU 1515	Rankin, R	Katsaounis, T	Camaño, J		Xie, H
TU 1540	Schröder, A	Antonietti, P	Boffi, D		

Time	F: LECT066 Jin/ Lazarov/ Mustapha ms: Fractional differential. . .	G: LECT067 Badia/ Nguyen ms: DDM	H: LECT068 Ullmann/ Wohlmuth ms: Uncertainty quantification. . .	I: LECT261 Frei/ Richter ms: Interface problems	J: HWLL001 Gedicke/ Sharma ms: Fourth order
TU 1400	Lazarov, R	Loisel, S	Silvester, D	Feistauer, M	Bonito, A
TU 1425	Wang, H	Nguyen, H	Powell, C	Patel, A	Nataraj, N
TU 1450	Pasciak, J	Spillane, N	Eigel, M	Heltai, L	Neilan, M
TU 1515	Salgado, A	Eikeland, E	Pranjal		Schedensack, M
TU 1540					

Tue 16:05–16:30: TEA in HWLL002 and HWLL004 (Howell building)

Tue 16:45–20:00 events in the Eastern Gateway building

16:45–18:00 in the Eastern Gateway Auditorium

John Whiteman: Introduction

Geoff Rodgers: 50 Years of Engineering Research at Brunel University

The Oden lecture  
Selection, calibration, validation, and  
implementation of predictive computational  
models in the presence of uncertainty

J. Tinsley Oden

18:00 Reception (Foyer and rooms 003/003a)  
and displays of research by members of CEDPS and IMM.

Tue 19:45– in the Hamilton Centre

Supper in the Newton and Mead /Cavendish rooms

Cash bar in the Hamilton Centre

## Wednesday 15th June

Time	A: LECT061 Praetorius/ Vohralik ms: A posteriori error est. . .	B: LECT062 Boffi/ Gastaldi ms: Multiphysics	C: LECT063 Arbogast/ Yotov ms: Locally conservative . . .	D: LECT064 Manni/ Speleers ms: Recent. . . isogeometric. . .	E: LECT065 Rjasanow/ Steinbach ms: BEM
WE 0830	Banz, L	Discacciati, M	Wheeler, M	Peters, J	Of, G
WE 0855	Gedicke, J	Fernández, M	Edwards, M	Toulopoulos, I	Rieder, A
WE 0920	Tittarelli, R	Heltai, L	Boon, W	Ratnani, A	Rjasanow, S
WE 0945	Vohralík, M	Vergara, C	Yotov, I	van Opstal, T	Weißer, S

Time	F: LECT066 Jin/ Lazarov/ Mustapha ms: Fractional differential. . .	G: LECT067 Badia/ Nguyen ms: DDM	H: LECT068 Ullmann/ Wohlmuth ms: Uncertainty quantification. . .	I: LECT261 Karakatsani/ Kyza ms: Error control of evolution. . .	J: HWLL001 Adler/ Starke ms: Nonlinear Materials
WE 0830	McLean, W	Kwok, F	Schillings, C	Stinner, B	Bertrand, F
WE 0855	Yan, Y	Bonazzoli, M	Teckentrup, A	Venkataraman, C	Wieners, C
WE 0920	Jin, B	Jolivet, P	Djurdjevac, A	Chrysafinos, K	Meyer, C
WE 0945	Cardoso, R (another mini-symposium)	Markopoulos, A	Ullmann, E	Pryer, T	Sander, O

Wed 10:10–10:35: COFFEE in HWLL002 and HWLL004 (Howell building)

Time	A: LECT061 Praetorius/ Vohralik ms: A posteriori error est. . .	B: LECT062 Boffi/ Gastaldi ms: Multiphysics	C: LECT063 Arbogast/ Yotov ms: Locally conservative . . .	D: LECT064 Manni/ Speleers ms: Recent. . . isogeometric. . .	E: LECT065 Rjasanow/ Steinbach ms: BEM
WE 1035	Kreuzer, C	Scacchi, S	Arbogast, T	Serra- Capizzano, S	Faustmann, M
WE 1100	Veese, A	Schöberl, J	Awanou, G	Manni, C	Hiptmair, R
WE 1125	Erath, C	Fabre, M	Araya, R	Hofreither, C	Michel, C

Time	F: LECT066 Ryan ms: Accuracy enhancement DGM	G: LECT067 Parallel session Steve Langdon	H: LECT068 Frei/ Richter ms: Interface problems	I: LECT261 Karakatsani/ Kyza ms: Error control of evolution. . .	J: HWLL001 Adler/ Starke ms: Nonlinear Materials
WE 1035	Chen, Y	Gibbs, A	Berggren, M	Kopteva, N	Adler, J
WE 1100	Frean, D	Eyere, E	Frei, S	Brenner, A	Benson, T
WE 1125	Meng, X	Godoy, E	Gangl, P	Gorynina, O	Emerson, D

Chair: **Hamid Bahai**

Wed 12:00–12:45 in HWLL001

**Virtual modeling and additive manufacturing  
(3D printing) for advanced materials (3D@UniPV):  
a new research arena**

**Ferdinando Auricchio**

Wed 12:50–14:00: LUNCH in the Newton and Darwin Rooms in the Hamilton Centre

Time	A: LECT061 Praetorius/ Vohralik ms: A posteriori error est. . .	B: LECT062 Boffi/ Gastaldi ms: Multiphysics	C: LECT063 Arbogast/ Yotov ms: Locally conservative . . .	D: LECT064 Manni/ Speleers ms: Recent. . . isogeometric. . .	E: LECT065 Gong/Xie/Zhang ms: Efficient computing. . .
WE 1400	van der Zee, K	Richter, T	Gillette, A	Mantzaflaris, A	Ji, X
WE 1425	Haberl, A	Ovall, J	Marini, L	Speleers, H	Kahle, C
WE 1450	Stevenson, R	Grubišić, L	Manzini, G	Gantner, G	Yin, X
WE 1515	Diening, L	Oyarzúa, R	Loula, A	Aimi, A	Gong, W

Time	F: LECT066 Duarte/ Gimperlein/ Laghrouche/ Mohamed ms: Enriched finite and BEMs	G: LECT067 Demkowicz/ Heuer ms: DPG	H: LECT068 Qui/ Rhebergen ms: Hybridizable DGM	I: LECT261 Apel/ Armentano ms: Singularities	J: HWLL001 Bacuta/ Li ms: Saddle Point Problems
WE 1400	Monk, P	Demkowicz, L	Di Pietro, D	Ciarlet, Jr., P	Bacuta, C
WE 1425	Mohamed, M	Fuentes, F	Shi, K	Acosta, G	Chen, L
WE 1450	Stark, D	Führer, T	Christophe, A	Borthagaray, J	Draganescu, A
WE 1515	Trevelyan, J	van der Zee, K	Dong, B	Wollner, W	Vassilevski, P

Wed 15:40–16:10: TEA in HWLL002 and HWLL004 (Howell building)

Time	A: LECT061 Oyarzua/ Ruiz Baier ms: viscous flow. . .	B: LECT062 Boffi/ Gastaldi ms: Multiphysics	C: LECT063 Lakkis/ Van der Zee ms: Adaptive methods. . .	D: LECT064 Manni/ Speleers ms: Recent. . . isogeometric. . .	E: LECT065 Gong/Xie/Zhang ms: Efficient computing. . .
WE 1610	Discacciati, M	Engström, C	Vohralík, M	Peterseim, D	Chen, H
WE 1635	Alvarez, M	Albella, J	Pollock, S	Bracco, C	Lehrenfeld, C
WE 1700	Mora, D	Chovan, J	Salgado, A		Xi, Y
WE 1725	Caucao, S	Sanches, R	Cangiani, A		Zhang, S

Time	F: LECT066 Gander/ Langer/ Steinbach ms: Space-time	G: LECT067 Demkowicz/ Heuer ms: DPG	H: LECT068 Qui/ Rhebergen ms: Hybridizable DGM	I: LECT261 Apel/ Armentano ms: Singularities	J: HWLL001 Bacuta/ Li ms: Saddle Point Problems
WE 1610	Gander, M	Stevenson, R	Peraire, J	Pfefferer, J	Yi, S
WE 1635	Neumüller, M	Roberts, N	Fu, G	Leykekhman, D	Zhu, Y
WE 1700	Krause, R	Muga, I	Shen, J	Swierczynski, P	Zulehner, W
WE 1725	Glas, S	Starke, G	Bustanza, R	Armentano, M	

**The Babuška lecture**

Chair: **Franco Brezzi**

Wed 18:10–19:00 in HWLL001  
**Computing spectra without  
solving eigenvalue problems**  
**Douglas N. Arnold**

**Wed 19:30– in the Hamilton Centre**

**Dinner in the Newton and Mead /Cavendish rooms**

**Cash bar in the Hamilton Centre**

## Thursday 16th June

Time	A: LECT061 Cangiani/ Manzini/ Weisser ms: ...polyhedral meshes	B: LECT062 John/ Knobloch/ Novo ms: Convection- dominated...	C: LECT063 Lakkis/ Van der Zee ms: Adaptive methods...	D: LECT064 Rösch ms: A priori... optimal control	E: LECT065 Rjasanow/ Steinbach ms: BEM
TH 0830	Antonietti, P	Kopteva, N	Praetorius, D	Apel, T	Niino, K
TH 0855	Lipnikov, K	Knobloch, P	Bonito, A	Wachsmuth, D	Schmidt, K
TH 0920	Di Pietro, D	Barrenechea, G	Kreuzer, C	Sandilya, R	
TH 0945	Droniou, J	Badia, S	Veeseer, A	Jordan, T	
TH 1010	Verani, M	Guermond, J		Mai, E	

Time	F: LECT066 Jin/ Lazarov/ Mustapha ms: Fractional differential...	G: LECT067 Demkowicz/ Heuer ms: DPG	H: LECT068 Möller/ Simeon ms: Advanced... isogeometric	I: LECT261 Wheeler/ Wick ms: ...subsurface modeling	J: HWLL001 Bause/ Radu ms: Higher order space-time
TH 0830	Mustapha, K	Keith, B	Langer, U	Sun, S	Schieweck, F
TH 0855	Diehl, P	Heuer, N	Möller, M	Toulopoulos, I	Matthies, G
TH 0920	Alfano, G		Mantzaflaris, A	Vasilyeva, M	Radu, F
TH 0945	Sousa, E		Lohfink, A	Wick, T	Bause, M
TH 1010			Calabrò, F	Lee, S	Feistauer, M

Thu 10:35–11:00: COFFEE in HWLL002 and HWLL004 (Howell building)

Chair: **L. Donatella Marini**

Thu 1100–1145 in HWLL001

**Efficient preconditioning of  $hp$ -FEM matrices  
by hierarchical low-rank approximations**

**J.S. Hesthaven**

Thu 1145–1230 in HWLL001

**Model reduction techniques in vibro-acoustics**

**Barbara Wohlmuth**

Thu 12:30–14:00: LUNCH in the Newton and Darwin Rooms in the Hamilton Centre

Time	A: LECT061 Cangiani/ Manzini/ Weisser ms: ...polyhedral meshes	B: LECT062 Georgoulis/ Wihler ms: Nonlinear Evolution...	C: LECT063 Lakkis/ Van der Zee ms: Adaptive methods...	D: LECT064 Rösch ms: A priori... optimal control	E: LECT065 Gallistl/ Nataraj ms: Stable FEMs
TH 1400	Brezzi, F	Makridakis, C	Bartels, S	Vexler, B	Kanschat, G
TH 1425	Lehrenfeld, C	Metcalfe, S	Awanou, G	Leykekhman, D	Barrenechea, G
TH 1450	Beirão da Veiga, L	Lakkis, O		Chrysafinos, K	Gastaldi, L
TH 1515	Wang, J	Pryer, T		Wollner, W	Gallistl, D

Time	F: LECT066 Duarte/ Gimperlein/ Laghrouche/ Mohamed ms: Enriched finite and BEMs	G: LECT067 Parallel session Michael Warby	H: LECT068 Möller/ Simeon ms: Advanced... isogeometric	I: LECT261 Ganesan/ Matthies/ Tobiska ms: PDEs in time- dependent...	J: HWLL001 Mikhailov/ Natroshvili ms: BDIE
TH 1400	Hiptmair, R	Barbeiro, S	Simeon, B	Stinner, B	Mikhailov, S
TH 1425	Langdon, S	Karátson, J	Takacs, S	Nürnberg, R	Portillo, C
TH 1450	Wendland, H	Türk,	Tani, M	Ludescher, T	Natroshvili, D
TH 1515	Borker, R	Argyridou, E		Brink, F	Kohr, M

Thu 15:40–16:10: TEA in HWLL002 and HWLL004 (Howell building)

Time	A: LECT061 Cangiani/ Manzini/ Weisser ms: ...polyhedral meshes	B: LECT062 John/ Knobloch/ Novo ms: Convection- dominated...	C: LECT063 Lakkis/ Van der Zee ms: Adaptive methods...	D: LECT064 Rösch ms: A priori... optimal control	E: LECT065 Gallistl/ Nataraj ms: Stable FEMs
TH 1610	Ye, X	Franz, S	Antonopoulou, D	Meyer, C	Brown, D
TH 1635	Ovall, J	Schroeder, P	Karakatsani, F	Wachsmuth, G	Nataraj, N
TH 1700	Gillette, A	Rubino, S	Wihler, T	Rösch, A	Droniou, J
TH 1725	Sutton, O	Skrzypacz, P	Neilan, M		Zanotti, P
TH 1750	Borio, A	Matthies, G			Jensen, M

Time	F: LECT066 Gander/ Langer/ Steinbach ms: Space-time	G: LECT067 Parallel session Simon Shaw	H: LECT068 Monk/ Nicholls ms: Optics and photonics	I: LECT261 Wheeler/ Wick ms: ...subsurface modeling	J: HWLL001 Mikhailov/ Natroshvili ms: BDIE
TH 1610	Al-Shanfari, F	Agnese, M	Solano, M	Naegel, A	Lanza de Cristo- foris, M
TH 1635	Moiola, A	Cox, S	Monk, P	Scialò, S	Johansson, B
TH 1700	Wintersteiger, C	Pinto, L	Ledger, P	Keilegavlen, E	Grzhibovskis, R
TH 1725	Zank, M	Živčáková, A	Spence, E	Kumar, K	Sladek, J
TH 1750	Lijoka, O		Min, M	Yotov, I	



**Thu 19:00: Pre-Dinner Drinks, Mead and Cavendish rooms**

**Thu 19:30: Conference dinner**

**Cash bar in the Hamilton Centre**

## Friday 17th June

Time	A: LECT061 Cangiani/ Manzini/ Weisser ms: ...polyhedral meshes	B: LECT062 John/ Knobloch/ Novo ms: Convection- dominated...	C: LECT063 Engström/ Giani/ Grubišić/ Ovall ms: Eigenvalue...	D: LECT064 Oyarzua/ Ruiz Baier ms: viscous flow...	E: LECT065 Gallistl/ Nataraj ms: Stable FEMs
FR 0830	Perugia, I	Frutos, J	Liu, X	Kanschot, G	Li, G
FR 0855	Georgoulis, E	García- Archilla, B	Stamm, B	Lee, J	Gedicke, J
FR 0920	Dong, Z	John, V	Bonito, A	Neilan, M	
FR 0945	Mascotto, L	Lederer, P	Schmidt, K	Rybak, I	
FR 1010	Cantin, P	Linke, A	Fumagalli, I	Ruiz-Baier, R	

Time	F: LECT066 Gander/ Langer/ Steinbach ms: Space-time	G: LECT067 DeVuyst ms: Meshless methods	H: LECT068 Monk/ Nicholls ms: Optics and photonics	I: LECT261 Ganesan/ Matthies/ Tobiska ms: PDEs in time- dependent...	J: HWLL001 Bause/ Radu ms: Higher order space-time
FR 0830	Gimperlein, H	Campbell, J	Nigam, N	Balázsová, M	Vexler, B
FR 0855	Maischak, M	Vignjevic, R	Rohan, E	Hahn, A	Stevenson, R
FR 0920	Schanz, M	Djordjevic, N	He, Y	Srivastava, S	Shaw, S
FR 0945	Merta, M	Hughes, K	Turc, C	Ganesan, S	
FR 1010		De Vuyst, T	Zschiedrich, L		

Thu 10:35–11:00: COFFEE in HWLL002 and HWLL004 (Howell building)

### The Zienkiewicz lecture

Chair: **Luiz Wrobel**

Thu 11:00–11:45 in HWLL001

**Some aspects of modelling high velocity impact  
on carbon fibre reinforced composites**

**Rade Vignjevic**

Thu 11:45–12:30 in HWLL001

**Development and analysis of spectral/*hp* element  
techniques for high Reynolds number flow  
simulations relevant to Formula One**

**Spencer Sherwin**

Thu 12:30–14:00: LUNCH in the Newton and Darwin Rooms in the Hamilton Centre

## Start times of the mini-symposium sessions

Tue1400 in LECT061, Wed0830 in LECT061, Wed1035 in LECT061, Wed1400 in LECT061.	A posteriori error estimation and adaptivity. Dirk Praetorius and Martin Vohralik
Thu0830 in LECT064, Thu1400 in LECT064, Thu1610 in LECT064.	A priori finite element error estimates in optimal control. Arnd Rösch
Tue1400 in LECT064, Wed1035 in LECT066.	Accuracy enhancement and superconvergence of discontinuous Galerkin methods. Jennifer Ryan
Wed1610 in LECT063, Thu0830 in LECT063, Thu1400 in LECT063, Thu1610 in LECT063.	Adaptive methods and singular solutions of nonlinear problems. Omar Lakkis and Kris Van der Zee
Thu0830 in LECT068, Thu1400 in LECT068.	Advanced FEM methodologies and isogeometric analysis. Matthias Möller and Bernd Simeon
Wed0830 in HWLL001, Wed1035 in HWLL001.	Advances in Finite Element Methods for Nonlinear Materials. James Adler and Gerhard Starke
Thu1400 in HWLL001, Thu1610 in HWLL001.	Boundary-Domain Integral Equations. Sergey Mikhailov and David Natroshvili
Wed1400 in LECT067, Wed1610 in LECT067, Thu0830 in LECT067.	DPG theory and practice. Leszek Demkowicz and Norbert Heuer
Fri0830 in LECT067.	Development and application of meshless methods. Tom DeVuyst
Wed0830 in LECT063, Wed1035 in LECT063, Wed1400 in LECT063.	Developments in locally conservative conforming methods for elliptic partial differential equations. Todd Arbogast and Ivan Yotov
Tue1400 in LECT065, Wed1400 in LECT065, Wed1610 in LECT065.	Efficient computing with finite element methods. Wei Gong, Hehu Xie and Shuo Zhang
Wed1400 in LECT261, Wed1610 in LECT261.	Elliptic problems with singularities. Thomas Apel and Gabriela Armentano
Thu1400 in LECT261, Fri0830 in LECT261.	Finite element methods for PDEs in time-dependent domains. Sashikumaar Ganesan, Gunar Matthies and Lutz Tobiska
Thu0830 in LECT062, Thu1610 in LECT062, Fri0830 in LECT062.	Finite element methods for convection-dominated problems. Volker John, Petr Knobloch and Julia Novo
Tue1400 in LECT261, Wed1035 in LECT068.	Finite element techniques for interface-problems. Stefan Frei and Thomas Richter
Tue1400 in LECT062, Thu1400 in LECT062.	Galerkin Methods for Nonlinear Evolution Problems. Emmanuil Georgoulis and Thomas Wihler
Thu0830 in HWLL001, Fri0830 in HWLL001.	Higher order space-time finite element methods. Markus Bause and Florin Radu
Wed1400 in LECT068, Wed1610 in LECT068.	Hybridizable discontinuous Galerkin methods. Weifeng Qui and Sander Rhebergen

Wed1400 in HWLL001, Wed1610 in HWLL001.	Multilevel Methods for Saddle Point Problems. Constantin Bacuta and Hengguang Li
Thu0830 in LECT261, Thu1610 in LECT261.	Numerical methods for flow and fractures in subsurface modeling. Mary Wheeler and Thomas Wick
Tue1400 in HWLL001.	Numerical methods for fourth order problems. Joscha Gedicke and Natasha Sharma
Tue1400 in LECT066, Wed0830 in LECT066, Thu0830 in LECT066.	Numerical methods for fractional differential equations. Bangti Jin, Raytcho Lazarov and Kassem Mustapha
Wed0830 in LECT062, Wed1035 in LECT062, Wed1400 in LECT062, Wed1610 in LECT062.	Numerical methods for multiphysics and coupled problems. Daniele Boffi and Lucia Gastaldi
Thu1610 in LECT068, Fri0830 in LECT068.	Numerical methods for optics and photonics. Peter Monk and David Nicholls
Wed1610 in LECT061, Fri0830 in LECT064.	Numerical methods for viscous flow in porous media. Ricardo Oyarzua and Ricardo Ruiz Baier
Wed0830 in LECT261, Wed1035 in LECT261.	On the design of numerical methods and error control of evolution PDEs. Fotini Karakatsani and Irene Kyza
Tue1400 in LECT063, Fri0830 in LECT063.	PDE Eigenvalue problems: computational modeling and numerical analysis. Christian Engström, Stefano Giani, Luka Grubišić and Jeffrey Owall
Thu0830 in LECT061, Thu1400 in LECT061, Thu1610 in LECT061, Fri0830 in LECT061.	PDE discretisation methods for polygonal and polyhedral meshes. Andrea Cangiani, Gianmarco Manzini and Steffen Weisser
Wed0830 in LECT065, Wed1035 in LECT065, Thu0830 in LECT065.	Recent advances in boundary element methods. Sergej Rjasanow and Olaf Steinbach
Tue1400 in LECT067, Wed0830 in LECT067.	Recent advances in domain decomposition methods. Santiago Badia and Hieu Nguyen
Wed1400 in LECT066, Thu1400 in LECT066.	Recent advances in enriched finite and boundary element methods. C. Armando Duarte, Heiko Gimperlein, Omar Laghrouche and M. Shadi Mohamed
Wed0830 in LECT064, Wed1035 in LECT064, Wed1400 in LECT064, Wed1610 in LECT064.	Recent developments in isogeometric analysis. Carla Manni and Hendrik Speleers
Wed1610 in LECT066, Thu1610 in LECT066, Fri0830 in LECT066.	Space-time discretization methods. Martin Gander, Ulrich Langer and Olaf Steinbach
Thu1400 in LECT065, Thu1610 in LECT065, Fri0830 in LECT065.	Stable FEMs with applications. Dietmar Gallistl and Neela Nataraj
Tue1400 in LECT068, Wed0830 in LECT068.	Uncertainty quantification using stochastic PDEs and finite elements. Elisabeth Ullmann and Barbara Wohlmuth

## Titles of talks in each session

### Titles of the invited talks

Tue0945, HWLL001 Mark Ainsworth. High order finite elements: mathematician's playground or practical engineering tool?.

Wed1810, HWLL001 Douglas N. Arnold. Computing spectra without solving eigenvalue problems.

Wed1200, HWLL001 Ferdinando Auricchio. Virtual modeling and additive manufacturing (3D printing) for advanced materials (3D@UniPV): a new research arena.

Tue1100, HWLL001 James Belak. Preparing for the Future of Computing: Bridging Scales within the Exascale Materials Co-design Center.

Thu1100, HWLL001 J.S. Hesthaven. Efficient preconditioning of  $hp$ -FEM matrices by hierarchical low-rank approximations.

Tue1650, ESGWAud J. Tinsley Oden. Selection, calibration, validation, and implementation of predictive computational models in the presence of uncertainty.

Tue1145, HWLL001 Jaime Peraire. Computational Photonics.

Fri1145, HWLL001 Spencer Sherwin. Development and analysis of spectral/ $hp$  element techniques for high Reynolds number flow simulations relevant to Formula One.

Fri1100, HWLL001 Rade Vignjevic. Some aspects of modelling high velocity impact on carbon fibre reinforced composites.

Thu1145, HWLL001 Barbara Wohlmuth. Model reduction techniques in vibro-acoustics.

### Tue1400–1605, LECT061 Mini-Symp: A posteriori error estimation and adaptivity

Tue1400 Daniel Peterseim. Relaxing the CFL condition for the wave equation on adaptive meshes.

Tue1425 Iain Smears. A posteriori error estimates for higher-order time discretizations.

Tue1450 Rita Riedlbeck. A posteriori error estimates for the Biot problem based on equilibrated  $H(\text{div})$ -conforming flux reconstructions.

Tue1515 Richard Rankin. Computable a posteriori error estimators for finite element approximations of an optimal control problem.

Tue1540 Andreas Schröder. A posteriori error estimates of  $hp$ -finite elements for mixed and mixed-hybrid methods.

## **Tue1400–1605, LECT062 Mini-Symp: Galerkin Methods for Nonlinear Evolution Problems**

- Tue1400 Ohannes Karakashian. Two level non-overlapping and overlapping Schwarz methods for discontinuous Galerkin approximations of second and fourth order elliptic problems.
- Tue1425 Max Jensen. Finite element methods for degenerate Hamilton-Jacobi-Bellman equations.
- Tue1450 Theodoros Katsaounis. A posteriori error control & adaptivity for evolution Schrödinger equations (Part A).
- Tue1515 Theodoros Katsaounis. A posteriori error control & adaptivity for evolution Schrödinger equations (Part B).
- Tue1540 Paola F. Antonietti. High-order discontinuous Galerkin approximations to second-order ordinary differential equations with applications to elastodynamics.

## **Tue1400–1605, LECT063 Mini-Symp: PDE Eigenvalue problems: computational modeling and numerical analysis**

- Tue1400 Nilima Nigam. A Bayesian approach to eigenvalue optimization.
- Tue1425 Dietmar Gallistl. Adaptive mixed finite elements for eigenvalues.
- Tue1450 Jean-Luc Guermond. An Interior Penalty Method with  $C^0$  Finite Elements for the Approximation of the Maxwell Equations in Heterogeneous Media: Convergence Analysis with Minimal Regularity.
- Tue1515 Jessika Camaño. Numerical approximation of the spectrum of the curl operator in multiply connected domains.
- Tue1540 Daniele Boffi. A posteriori analysis for Maxwell's eigenvalue problem.

## **Tue1400–1605, LECT064 Mini-Symp: Accuracy enhancement and superconvergence of discontinuous Galerkin methods**

- Tue1400 Jörg Peters. Non-uniform Filters via Shift and Scale for Discontinuous Galerkin Output.
- Tue1425 Julia Docampo Sánchez. Geometry of rotated Smoothness-Increasing-Accuracy-Conserving (SIAC) filters.
- Tue1450 Robert M. Kirby. Revisiting Accuracy Preserving Properties of SIAC Filtering From An Approximation Theory Perspective.

## **Tue1400–1605, LECT065 Mini-Symp: Efficient computing with finite element methods**

- Tue1400 Long Chen. An interface-fitted mesh generator and virtual element methods for elliptic interface problems.
- Tue1425 Ya-na Di. Theoretical Analysis for Capillary Rise between a Flexible Film and a Solid Wall.
- Tue1450 Yifeng Xu. An adaptive finite element method for electrical impedance tomography.
- Tue1515 Hehu Xie. Fully Computable Error Estimates for Eigenvalue Problems.

## **Tue1400–1605, LECT066 Mini-Symp: Numerical methods for fractional differential equations**

- Tue1400 Raytcho Lazarov. Petrov-Galerkin Finite Element Method for Fractional Convection-Diffusion Equations.
- Tue1425 Hong Wang. Accurate and fast numerical methods for fractional partial differential equations.
- Tue1450 Joseph E. Pasciak. Numerical Approximation of a Variational Problem on Bounded Domain involving the Fractional Laplacian.
- Tue1515 Abner J. Salgado. A PDE approach to the fractional obstacle problem.

## **Tue1400–1605, LECT067 Mini-Symp: Recent advances in domain decomposition methods**

Tue1400 Sébastien Loisel. Optimized Schwarz and 2-Lagrange Multiplier Methods for Multiscale Elliptic PDEs.

Tue1425 Hieu Nguyen. Physics-based balancing domain decomposition by constraints for heterogeneous problems.

Tue1450 Nicole Spillane. An adaptive Multipreconditioned Conjugate Gradient algorithm and its application to domain decomposition.

Tue1515 Erik Eikeland. Schwarz preconditioner with harmonically enriched multiscale coarse space.

## **Tue1400–1605, LECT068 Mini-Symp: Uncertainty quantification using stochastic PDEs and finite elements**

Tue1400 David Silvester. Adaptive algorithms driven by a posteriori estimates of error reduction for PDEs with random data.

Tue1425 Catherine E. Powell. Efficient error estimation and fast solvers for stochastic Galerkin finite element approximation.

Tue1450 Martin Eigel. Adaptive stochastic Galerkin FEM with hierarchical tensor representations.

Tue1515 Pranjal. An optimal solver for linear systems arising from stochastic FEM approximation of diffusion equations with random coefficients.

## **Tue1400–1605, LECT261 Mini-Symp: Finite element techniques for interface-problems**

Tue1400 Miloslav Feistauer. Finite element-discontinuous Galerkin method for the numerical simulation of two-phase flow.

Tue1425 Ajit Patel. Convergence results with natural norms: stabilized Lagrange multiplier method for elliptic interface problems.

Tue1450 Luca Heltai. A study on the accuracy of Immersed Finite Element Methods.

## **Tue1400–1605, HWLL001 Mini-Symp: Numerical methods for fourth order problems**

Tue1400 Andrea Bonito. Large deformations of bilayer plates.

Tue1425 Neela Nataraj. Error estimates for the numerical approximation of a distributed optimal control problem governed by the von Kármán equations.

Tue1450 Michael Neilan. A  $C^0$  method for the biharmonic problem without extrinsic penalization..

Tue1515 Mira Schedensack. New mixed FEMs for the biharmonic equation based on the Helmholtz decomposition.

## **Wed0830–1010, LECT061 Mini-Symp: A posteriori error estimation and adaptivity**

Wed0830 Lothar Banz. An  $hp$ -Adaptive  $C^0$ -Interior Penalty Method for the Obstacle Problem of Clamped Kirchhoff Plates.

Wed0855 Joscha Gedicke. An adaptive  $P_1$  finite element method for two-dimensional Maxwell's equations.

Wed0920 R. Tittarelli. A guaranteed equilibrated error estimator for the  $\mathbf{A} - \varphi$  and  $\mathbf{T} - \Omega$  magnetodynamic harmonic formulations of the Maxwell system.

Wed0945 Martin Vohralík. Polynomial-degree-robust estimates in three space dimensions.

### **Wed0830–1010, LECT062 Mini-Symp: Numerical methods for multiphysics and coupled problems**

- Wed0830 Marco Discacciati. Optimized Schwarz methods for the Stokes-Darcy problem.
- Wed0855 Miguel A. Fernández. Numerical methods for immersed FSI with thin-walled solids.
- Wed0920 Luca Heltai. A natural framework for isogeometric fluid-structure-interaction: coupling BEM and Shell models.
- Wed0945 Christian Vergara. Partitioned algorithms for fluid-structure interaction arising in hemodynamics.

### **Wed0830–1010, LECT063 Mini-Symp: Developments in locally conservative conforming methods for elliptic partial differential equations**

- Wed0830 Mary F. Wheeler. Enriched Galerkin approximation for flow and transport problems.
- Wed0855 Michael G Edwards. CVD-MPFA Darcy Flux Approximation on Unstructured Grids.
- Wed0920 Wietse M. Boon. Robust Discretization of Flow in Fractured Porous Media.
- Wed0945 Ivan Yotov. A multipoint stress mixed finite element method for linear elasticity.

### **Wed0830–1010, LECT064 Mini-Symp: Recent developments in isogeometric analysis**

- Wed0830 Jörg Peters. Design and Analysis on surfaces with irregularities.
- Wed0855 Ioannis Touloupoulos. Discontinuous Galerkin Isogeometric Analysis of Elliptic Diffusion Problems on Segmentations with Gaps and Overlaps.
- Wed0920 Ahmed Ratnani. Parallel IsoGeometric Time domain Maxwell and Vlasov-Maxwell solvers .
- Wed0945 Timo M. van Opstal. Isogeometric Divergence-Conforming Variational Multiscale Formulation of Incompressible Turbulent Flows.

### **Wed0830–1010, LECT065 Mini-Symp: Recent advances in boundary element methods**

- Wed0830 Günther Of. Computational aspects of fast adaptive boundary element methods.
- Wed0855 Alexander Rieder. Optimal additive Schwarz preconditioning for the  $hp$ -BEM: the hypersingular integral operator in 3D.
- Wed0920 Sergej Rjasanow. Matrix valued ACA for high order BEM.
- Wed0945 Steffen Weißer. Convection-adapted BEM-based finite element method on tetrahedral and polyhedral meshes.

### **Wed0830–1010, LECT066 Mini-Symp: Numerical methods for fractional differential equations**

- Wed0830 William McLean. Subdiffusion in a nonconvex polygon.
- Wed0855 Yubin Yan. An analysis of the modified L1 scheme for the time-fractional partial differential equations with nonsmooth data.
- Wed0920 Bangti Jin. Time Stepping Schemes for Fractional Diffusion.
- Wed0945 R. P.R. Cardoso. Smooth particle hydrodynamics analysis of high-speed impact including fracture criteria and FE conversion( ms: Development and application of meshless methods) .

### **Wed0830–1010, LECT067 Mini-Symp: Recent advances in domain decomposition methods**

- Wed0830 Felix Kwok. Time parallelization of Schwarz waveform relaxation methods.
- Wed0855 Marcella Bonazzoli. High order edge elements and domain decomposition preconditioning for the time-harmonic Maxwell's equations.
- Wed0920 Pierre Jolivet. Block iterative methods and recycling for improved scalability of linear solvers.
- Wed0945 Alexandros Markopoulos. The Hybrid Total FETI method in ESPRESO library.



### **Wed0830–1010, LECT068 Mini-Symp: Uncertainty quantification using stochastic PDEs and finite elements**

Wed0830 Claudia Schillings. Analysis of the Ensemble Kalman Filter for Inverse Problems.

Wed0855 Aretha Teckentrup. Gaussian process regression in Bayesian inverse problems.

Wed0920 Ana Djurdjevac. Advection-diffusion equations with random coefficients on moving hypersurfaces.

Wed0945 Elisabeth Ullmann. Multilevel Monte Carlo Analysis for Optimal Control of Elliptic PDEs with Random Coefficients.

### **Wed0830–1010, LECT261 Mini-Symp: On the design of numerical methods and error control of evolution PDEs**

Wed0830 Björn Stinner. Curve shortening flow coupled to lateral diffusion.

Wed0855 Chandrasekhar Venkataraman. Finite element approximation of semilinear parabolic reaction diffusion systems with IMEX timestepping.

Wed0920 Konstantinos Chrysafinos. Best approximation error estimates for the Allen-Cahn equation.

Wed0945 Tristan Pryer. Adaptive Regularisation.

### **Wed0830–1010, HWLL001 Mini-Symp: Advances in Finite Element Methods for Nonlinear Materials**

Wed0830 F. Bertrand. Least-Squares Method in relation to Mixed Finite Elements for Elasticity.

Wed0855 Christian Wieners. Hybrid Discontinuous Galerkin Methods in Solid Mechanics.

Wed0920 Christian Meyer. The Nitsche trick for the obstacle problem – a counterexample and consequences for optimal control.

Wed0945 Oliver Sander. Discretization methods for oriented materials.

### **Wed1035–1150, LECT061 Mini-Symp: A posteriori error estimation and adaptivity**

Wed1035 Christian Kreuzer. The role of oscillation in a posteriori error analysis.

Wed1100 Andreas Veiser. A posteriori error estimation, error-dominated oscillation and obstacles.

Wed1125 Christoph Erath. Adaptive vertex-centered finite volume methods with convergence rates.

### **Wed1035–1150, LECT062 Mini-Symp: Numerical methods for multiphysics and coupled problems**

Wed1035 Simone Scacchi. Scalable Newton-Krylov-BDDC methods for cardiac electromechanics.

Wed1100 Joachim Schöberl. NGS-Py: A natural language for hp-FEM in multiphysics.

Wed1125 Mathieu Fabre. A mixed formulation for large deformation contact problem using IsoGeometric Analysis.

### **Wed1035–1150, LECT063 Mini-Symp: Developments in locally conservative conforming methods for elliptic partial differential equations**

Wed1035 Todd Arbogast. New mixed finite elements on quadrilaterals of minimal dimension.

Wed1100 Gerard Awanou. Local bounded cochain projections on cubical meshes.

Wed1125 Rodolfo Araya. A multiscale hybrid-mixed method for the Stokes and Brinkman equations.

### **Wed1035–1150, LECT064 Mini-Symp: Recent developments in isogeometric analysis**

Wed1035 Stefano Serra-Capizzano. The GLT class as a generalized Fourier analysis and applications.

Wed1100 Carla Manni. Spectral analysis of matrices arising in GB-spline isogeometric methods.

Wed1125 Clemens Hofreither. Robust Multigrid for Isogeometric Analysis using Subspace Correction.

### **Wed1035–1150, LECT065 Mini-Symp: Recent advances in boundary element methods**

Wed1035 Markus Faustmann. Local error estimates and convergence of the Galerkin boundary element method on polygonal domains.

Wed1100 R. Hiptmair. Second-Kind Single Trace Boundary Integral Equations.

Wed1125 Christian Michel. BEM for solid mechanics with damage and its application to modelling composite materials.

### **Wed1035–1150, LECT066 Mini-Symp: Accuracy enhancement and superconvergence of discontinuous Galerkin methods**

Wed1035 Yanlai Chen. A fully conservative and superconvergent discontinuous Galerkin method for third-order linear equations in one space dimension.

Wed1100 Daniel Frean. Discontinuous Galerkin methods: Time evolution of superconvergence properties.

Wed1125 Xiong Meng. Discontinuous Galerkin methods for nonlinear scalar hyperbolic conservation laws: divided difference estimates and accuracy enhancement.

### **Wed1035–1150, LECT067 Parallel session:**

Wed1035 Andrew Gibbs. Hybrid Numerical Asymptotic Boundary Element Method for Multiple Scattering Problems.

Wed1100 Emagbetere Eyere. Finite element modeling for cold rolling of aluminium A1200.

Wed1125 Eduardo Godoy. A DtN finite element method for axisymmetric elasticity in semi-infinite domains.

### **Wed1035–1150, LECT068 Mini-Symp: Finite element techniques for interface-problems**

Wed1035 Martin Berggren. A Nitsche-type method for Helmholtz equation with an embedded, acoustically permeable interface.

Wed1100 Stefan Frei. Accurate spatial and temporal discretisation techniques for interface problems and fluid-structure interactions in Eulerian coordinates.

Wed1125 Peter Gangl. A Locally Modified Fitted Finite Element Method for Interface Problems in Shape and Topology Optimization.

### **Wed1035–1150, LECT261 Mini-Symp: On the design of numerical methods and error control of evolution PDEs**

Wed1035 Natalia Kopteva. Maximum-norm a posteriori error estimation for classical and singularly perturbed parabolic problems.

Wed1100 Andreas Brenner. A-posteriori error estimates for pressure-projection schemes.

Wed1125 Olga Gorynina. Time and space adaptivity for the wave equation discretized in time by a second order scheme.

### **Wed1035–1150, HWLL001 Mini-Symp: Advances in Finite Element Methods for Nonlinear Materials**

Wed1035 James H. Adler. A Mixed-Method B-Field Finite-Element Formulation for Incompressible, Resistive Magnetohydrodynamics.

Wed1100 Thomas R. Benson. Geometric multigrid with operator-dependent coarse spaces.

Wed1125 D. B. Emerson. A Deflation Technique for Detecting Multiple Liquid Crystal Equilibrium States.

### **Wed1400–1540, LECT061 Mini-Symp: A posteriori error estimation and adaptivity**

- Wed1400 Kristoffer G. van der Zee. Optimal goal-oriented adaptivity.  
Wed1425 Alexander Haberl. Adaptive FEM for elliptic problems with Gårding inequality.  
Wed1450 Rob Stevenson. Convergence and Optimality of hp-AFEM.  
Wed1515 Lars Diening. An update on the maximum strategy.

### **Wed1400–1540, LECT062 Mini-Symp: Numerical methods for multiphysics and coupled problems**

- Wed1400 Thomas Richter. A Fully Eulerian Finite Element Discretization for Fluid-Structure Interactions .  
Wed1425 Jeffrey S. Owall. Auxiliary subspace error estimates for elliptic problems.  
Wed1450 Luka Grubišić. Eigenvalue problem for a network of struts modeling an elastic endovascular stent.  
Wed1515 Ricardo Oyarzúa. A fully-mixed finite element method for the Navier-Stokes/Darcy coupled problem with nonlinear viscosity.

### **Wed1400–1540, LECT063 Mini-Symp: Developments in locally conservative conforming methods for elliptic partial differential equations**

- Wed1400 Andrew Gillette. Generalized barycentric coordinates for degenerate geometry in FEM.  
Wed1425 L. Donatella Marini. Serendipity Nodal VEM spaces.  
Wed1450 Gianmarco Manzini. An arbitrary order accurate mimetic method for elliptic problems in mixed form.  
Wed1515 Abimael F. D. Loula. Stabilized hybrid mixed finite element methods for incompressible flows.

### **Wed1400–1540, LECT064 Mini-Symp: Recent developments in isogeometric analysis**

- Wed1400 Angelos Mantzaflaris. On the use of numerical tensor methods in isogeometric analysis.  
Wed1425 Hendrik Speleers. Quasi-interpolants and local approximation estimates for hierarchical spline spaces.  
Wed1450 Gregor Gantner. Optimal convergence for adaptive IGA boundary element methods.  
Wed1515 Alessandra Aimi. An isogeometric approach to symmetric Galerkin boundary element method.

### **Wed1400–1540, LECT065 Mini-Symp: Efficient computing with finite element methods**

- Wed1400 Xia Ji. Transmission Eigenvalues and Invisibility.  
Wed1425 Christian Kahle. Topology optimization in Navier–Stokes flow with a diffuse-interface approach.  
Wed1450 Xiaobo Yin. Anisotropic meshes and stabilized parameters for the stabilized finite element methods.  
Wed1515 Wei Gong. A multilevel correction method for optimal controls of elliptic equation.

### **Wed1400–1540, LECT066 Mini-Symp: Recent advances in enriched finite and boundary element methods**

- Wed1400 Peter Monk. Plane Wave Discontinuous Galerkin Methods for Scattering Problems.  
Wed1425 M. Shadi Mohamed. Solving time-dependent heat transfer problems with enriched finite elements.  
Wed1450 David Stark. A partition-of-unity boundary element method with space-time enrichment for the wave equation.  
Wed1515 Jon Trevelyan. The simulation of fracture mechanics problems in anisotropic media using the Extended Boundary Element Method.

### **Wed1400–1540, LECT067 Mini-Symp: DPG theory and practice**

- Wed1400 Leszek Demkowicz. The double adaptivity algorithm.  
Wed1425 Federico Fuentes. Minimum residual methods applied to linear thermoviscoelasticity.  
Wed1450 Thomas Führer. Robust coupling of DPG and BEM for a singularly perturbed transmission problem.  
Wed1515 Kristoffer G. van der Zee. The nonlinear Petrov–Galerkin method in Banach spaces: Eliminating the Gibbs phenomena.

### **Wed1400–1540, LECT068 Mini-Symp: Hybridizable discontinuous Galerkin methods**

- Wed1400 Daniele A. Di Pietro. Bridging Hybrid High-Order methods and Hybridizable Discontinuous Galerkin methods.  
Wed1425 Ke Shi. Reduced order HDG methods based on general polygonal meshes.  
Wed1450 Alexandra Christophe. Hybridizable discontinuous Galerkin method for time-domain electromagnetics.  
Wed1515 Bo Dong. Superconvergent HDG methods for third-order equations in one-space dimension.

### **Wed1400–1540, LECT261 Mini-Symp: Elliptic problems with singularities**

- Wed1400 P. Ciarlet, Jr.. Domain Decomposition Methods with low-regularity solution for nuclear core reactor simulations.  
Wed1425 Gabriel Acosta. Finite element approximations for a fractional Laplace equation.  
Wed1450 Juan Pablo Borthagaray. Finite element approximation for the fractional eigenvalue problem.  
Wed1515 Winnifried Wollner. Finite Element Approximation of Gradient Constraint Elliptic Optimization Problems on Non-Smooth Domains .

### **Wed1400–1540, HWLL001 Mini-Symp: Multilevel Methods for Saddle Point Problems**

- Wed1400 Constantin Bacuta. Saddle point least squares approaches to mixed formulations.  
Wed1425 Long Chen. Fast Auxiliary Space Preconditioner for Linear Elasticity in Mixed Form.  
Wed1450 Andrei Draganescu. Multigrid methods for boundary control of elliptic equations.  
Wed1515 Panayot S. Vassilevski. Parallel Preconditioners for  $H(\text{div})$  and related saddle-point problems.

### **Wed1610–1750, LECT061 Mini-Symp: Numerical methods for viscous flow in porous media**

- Wed1610 Marco Discacciati. The Interface Control Domain Decomposition (ICDD) method for the Stokes-Darcy coupling.  
Wed1635 Mario Alvarez. A posteriori error analysis for a viscous flow–transport problem.  
Wed1700 David Mora. A mixed FEM for a vorticity formulation of the Brinkman equations.  
Wed1725 Sergio Caucao. A posteriori error analysis for a fully-mixed formulation of the Navier–Stokes/Darcy coupled problem with nonlinear viscosity.

### **Wed1610–1750, LECT062 Mini-Symp: Numerical methods for multiphysics and coupled problems**

- Wed1610 Christian Engström. On  $\omega$ -nonlinear eigenvalue problems with applications in electromagnetics.  
Wed1635 J. Albella. Improved Arlequin method for the Helmholtz equation in 2D.  
Wed1700 Jaroslav Chovan. A mathematical model for induction hardening including nonlinear magnetic field and controlled Joule heating.  
Wed1725 Rodolfo André Kuche Sanches. Partitioned fluid-shell coupling based on a coarse higher order mesh and positional dynamics shell finite element.

### **Wed1610–1750, LECT063 Mini-Symp: Adaptive methods and singular solutions of nonlinear problems**

- Wed1610 Martin Vohralík. Localization of dual norms, local stopping criteria, and fully adaptive solvers.  
Wed1635 Sara Pollock. Coarse Mesh Regularization and Adaptivity for Nonlinear Elliptic PDE Solvers.  
Wed1700 Abner J. Salgado. Adaptive finite element methods for an optimal control problem involving Dirac measures.  
Wed1725 Andrea Cangiani. Adaptivity and Blow-up detection for nonlinear evolution problems.

### **Wed1610–1750, LECT064 Mini-Symp: Recent developments in isogeometric analysis**

- Wed1610 Daniel Peterseim. Two mathematical aspects of Isogeometric Analysis: Quasi-optimal adaptive mesh refinement and superior eigenvalue approximation.  
Wed1635 Cesare Bracco. On the design of dual-compatible T-mesh refinement algorithms.

### **Wed1610–1750, LECT065 Mini-Symp: Efficient computing with finite element methods**

- Wed1610 Hongtao Chen. A recovery based linear finite element method for 4th order problems.  
Wed1635 Christoph Lehrenfeld. Optimal preconditioning of a cut finite element method for unfitted interface problems.  
Wed1700 Yingxia Xi. Recursive integral method for a non-linear non-selfadjoint transmission eigenvalue problem.  
Wed1725 Shuo Zhang. Mixed element method for eigenvalue problem of the biharmonic equation.

### **Wed1610–1750, LECT066 Mini-Symp: Space-time discretization methods**

- Wed1610 Martin J. Gander. Extension of Linear Time-Parallel Algorithms to Non-Linear Problems.  
Wed1635 Martin Neumüller. Space-time CFOSLS Methods with AMGe Upscaling.  
Wed1700 Rolf Krause. Multilevel Approaches in Space and Time.  
Wed1725 Silke Glas. Space-time and reduced basis methods.

### **Wed1610–1750, LECT067 Mini-Symp: DPG theory and practice**

- Wed1610 Rob Stevenson. A stable DPG formulation of transport equations.  
Wed1635 Nathan V. Roberts. Geometric multigrid for scalable DPG solves in Camellia.  
Wed1700 Ignacio Muga. The nonlinear Petrov–Galerkin method in Banach spaces: yet another improvement of Babuška’s *a priori* error estimate.  
Wed1725 Gerhard Starke. First-order system  $LL^*$  using nonconforming test functions.

### **Wed1610–1750, LECT068 Mini-Symp: Hybridizable discontinuous Galerkin methods**

- Wed1610 Jaime Peraire. The HDG method for implicit large eddy simulation of transitional turbulent flows.  
Wed1635 Guosheng Fu. HDG methods for diffusion problems.  
Wed1700 Jiguang Shen. A hybridizable discontinuous Galerkin method for the  $p$ -Laplacian.  
Wed1725 Rommel Bustinza. An anisotropic *a priori* error analysis for a convection diffusion problem using an HDG method.

### **Wed1610–1750, LECT261 Mini-Symp: Elliptic problems with singularities**

Wed1610 Johannes Pfefferer. Adapted numerical methods for the Poisson equation with  $L^2$  boundary data in non-convex domains.

Wed1635 Dmitry Leykekhman. On positivity of the discrete Green's function and discrete Harnack inequality for piecewise linear elements.

Wed1700 Piotr Swierczynski. Energy-correction method for Dirichlet boundary control problem.

Wed1725 María Gabriela Armentano. Elliptic problems in a non-Lipschitz domain.

### **Wed1610–1750, HWLL001 Mini-Symp: Multilevel Methods for Saddle Point Problems**

Wed1610 Son-Young Yi. A block-diagonal preconditioner for a four-field mixed finite element method for Biot's equations.

Wed1635 Yunrong Zhu. Auxiliary Space Preconditioner for Linear Elasticity Equations with Weakly Imposed Symmetry.

Wed1700 Walter Zulehner. A new approach to mixed methods for biharmonic problems in 2D and 3D and efficient solvers for the discretized problems.

### **Thu0830–1035, LECT061 Mini-Symp: PDE discretisation methods for polygonal and polyhedral meshes**

Thu0830 Paola F. Antonietti. Agglomeration-based multigrid algorithms for high order Discontinuous Galerkin methods.

Thu0855 Konstantin Lipnikov. The mimetic finite difference method for the Landau-Lifshitz equation.

Thu0920 Daniele A. Di Pietro. A Hybrid High-Order method for Leray–Lions elliptic equations on general meshes.

Thu0945 Jérôme Droniou. Super-convergence for modified mimetic and finite volume methods.

Thu1010 Marco Verani. Virtual element method and topology optimization on polygonal meshes.

### **Thu0830–1035, LECT062 Mini-Symp: Finite element methods for convection-dominated problems**

Thu0830 Natalia Kopteva. A posteriori error estimates on anisotropic meshes.

Thu0855 Petr Knobloch. A positivity and linearity preserving AFC scheme on general meshes.

Thu0920 Gabriel R. Barrenechea. Nonlinear edge diffusion methods: link to AFC schemes and adaptivity.

Thu0945 Santiago Badia. Monotonicity preserving nonlinear stabilization for hyperbolic scalar problems.

Thu1010 Jean-Luc Guermond. An explicit invariant domain preserving continuous finite element technique for hyperbolic systems.

### **Thu0830–1035, LECT063 Mini-Symp: Adaptive methods and singular solutions of nonlinear problems**

Thu0830 Dirk Praetorius. Axioms of Adaptivity.

Thu0855 Andrea Bonito. Adaptive finite element methods for the Laplace-Beltrami operator.

Thu0920 Christian Kreuzer. Adaptive Finite element approximation of steady flows of incompressible fluids with implicit power-law-like rheology.

Thu0945 Andreas Veerer. Nonlinear positivity preserving finite element approximation.

### **Thu0830–1035, LECT064 Mini-Symp: A priori finite element error estimates in optimal control**

- Thu0830 Thomas Apel. Discretization error estimates for Dirichlet control problems in polygonal domains.
- Thu0855 Daniel Wachsmuth. Exponential convergence of  $hp$ -finite element discretization of optimal boundary control problems with elliptic partial differential equations.
- Thu0920 Ruchi Sandilya. Error estimates for a discontinuous finite volume discretization of the Brinkman optimal control problem.
- Thu0945 Tobias Jordan. Finite element analysis of Free Material Optimization problems.
- Thu1010 Edwin Mai. Algorithmic approaches in optimal shape control of incompressible flows using finite elements.

### **Thu0830–1035, LECT065 Mini-Symp: Recent advances in boundary element methods**

- Thu0830 Kazuki Niino. An eigenvalue analysis based on contour integrals for periodic boundary value problems with the boundary element method.
- Thu0855 Kersten Schmidt. Asymptotic expansion techniques for singularly perturbed boundary integral equations.

### **Thu0830–1035, LECT066 Mini-Symp: Numerical methods for fractional differential equations**

- Thu0830 Kassem Mustapha. Finite element methods for fractional diffusion problems.
- Thu0855 Patrick Diehl. Energy equivalence for the horizon independent bond-based peridynamic softening model according to classical theory.
- Thu0920 Giulio Alfano. Rate-dependent cohesive-zone models based on fractional viscoelasticity.
- Thu0945 Erci lia Sousa. Anomalous diffusion with resetting.

### **Thu0830–1035, LECT067 Mini-Symp: DPG theory and practice**

- Thu0830 Brendan Keith. Some recent progress with the DPG method.
- Thu0855 Norbert Heuer. A DPG method for the heat equation.

### **Thu0830–1035, LECT068 Mini-Symp: Advanced FEM methodologies and isogeometric analysis**

- Thu0830 Ulrich Langer. Space-time isogeometric analysis of parabolic evolution problems.
- Thu0855 Matthias Möller. Solving compressible flow problems by isogeometric analysis.
- Thu0920 Angelos Mantzaflaris. On the design and versatile implementation of isogeometric methods .
- Thu0945 Anna-Pia Lohfink. Direct visualization of IGA simulation models on modern GPUs.
- Thu1010 Francesco Calabrò. Efficient Quadrature for High Degree Isogeometric Analysis.

### **Thu0830–1035, LECT261 Mini-Symp: Numerical methods for flow and fractures in subsurface modeling**

- Thu0830 Shuyu Sun. An adaptive mixed finite element method for Darcy flow in fractured porous media.
- Thu0855 Ioannis Touloupoulos. Numerical methods for p-Laplace type problems.
- Thu0920 Maria Vasilyeva. A generalized multiscale finite element method for problems in fractured media.
- Thu0945 Thomas Wick. Phase-field fracture propagation: modeling and numerical methods.
- Thu1010 Sanghyun Lee. Phase-field fracture propagation: validations and applications.

### **Thu0830–1035, HWLL001 Mini-Symp: Higher order space-time finite element methods**

- Thu0830 Friedhelm Schieweck. Analysis of a dG-method in time with post-processing for the transient Stokes problem.
- Thu0855 Gunar Matthies. Higher order variational time discretisations for the Oseen equations.
- Thu0920 Florin A. Radu. Higher order space-time finite elements for the diffusion equation.
- Thu0945 Markus Bause. Space-Time Finite Element Approximation of Flow in Deformable Porous Media.
- Thu1010 Miloslav Feistauer. Discontinuous Galerkin method for the solution of elasto-dynamic and fluid-structure interaction problems.

### **Thu1400–1540, LECT061 Mini-Symp: PDE discretisation methods for polygonal and polyhedral meshes**

- Thu1400 Franco Brezzi. Recent variants of Mixed VEM spaces.
- Thu1425 Christoph Lehrenfeld. High order exactly divergencefree HDG methods for incompressible flows.
- Thu1450 Lourenço Beirão da Veiga. Divergence free Virtual Elements for the Stokes problem.
- Thu1515 Junping Wang. Primal-Dual Weak Galerkin Finite Element Methods for PDEs.

### **Thu1400–1540, LECT062 Mini-Symp: Galerkin Methods for Nonlinear Evolution Problems**

- Thu1400 Charalambos Makridakis. Approximations to transport, convection-diffusion and nonlinear hyperbolic problems.
- Thu1425 Stephen Metcalfe. *hp*-Adaptive Galerkin Time Stepping Methods for Nonlinear IVPs.
- Thu1450 Omar Lakkis. Well-balanced kinetic schemes for the shallow water equation with bulk recharge and discharge.
- Thu1515 Tristan Pryer. Approximation of Liquid Curtains.

### **Thu1400–1540, LECT063 Mini-Symp: Adaptive methods and singular solutions of nonlinear problems**

- Thu1400 Sören Bartels. Adaptive approximation of the Monge-Kantorovich problem.
- Thu1425 Gerard Awanou. Standard finite elements for the numerical resolution of the elliptic Monge-Ampère equation.

### **Thu1400–1540, LECT064 Mini-Symp: A priori finite element error estimates in optimal control**

- Thu1400 Boris Vexler. Finite element methods for parabolic optimal control problems with controls from measure spaces.
- Thu1425 Dmitriy Leykekhman. Optimal error estimates of parabolic optimal control problems with a moving point source.
- Thu1450 Konstantinos Chrysafinos. A priori error estimates for an optimal control problem related to quasi-linear parabolic pdes.
- Thu1515 Winnifried Wollner. Discretization of Parabolic Optimization Problems with Constraints on the Spatial Gradient of the State.



### **Thu1400–1540, LECT065 Mini-Symp: Stable FEMs with applications**

- Thu1400 Guido Kanschat. Underpenalized discontinuous Galerkin methods for radiation transport.  
Thu1425 Gabriel R. Barrenechea. Stable and stabilised finite element methods on anisotropic meshes.  
Thu1450 Lucia Gastaldi. A fictitious domain approach with a distributed Lagrange multiplier for fluid-structure interactions.  
Thu1515 Dietmar Gallistl. Stable splitting of polyharmonic operators.

### **Thu1400–1540, LECT066 Mini-Symp: Recent advances in enriched finite and boundary element methods**

- Thu1400 R. Hiptmair. Dispersion Analysis of Plane Wave Discontinuous Galerkin Methods.  
Thu1425 Stephen Langdon. Hybrid numerical-asymptotic methods for wave scattering problems.  
Thu1450 Holger Wendland. Solving PDEs with Radial Basis Functions.  
Thu1515 Raunak Borker. A high-order discontinuous Galerkin method for unsteady advection-diffusion problems.

### **Thu1400–1540, LECT067 Parallel session:**

- Thu1400 Sílvia Barbeiro. Cross-diffusion systems for image processing.  
Thu1425 János Karátson. Equivalent operator preconditioning for elliptic finite element problems.  
Thu1450 Önder Türk. A finite element formulation for Maxwell eigenvalue problem using continuous Lagrangian interpolations.  
Thu1515 Eleni Argyridou. Estimating errors in quantities of interest in the case of hyperelastic membrane deformation.

### **Thu1400–1540, LECT068 Mini-Symp: Advanced FEM methodologies and isogeometric analysis**

- Thu1400 Bernd Simeon. Isogeometric analysis for scaled boundary parametrizations.  
Thu1425 Stefan Takacs. Robust approximation error and inverse estimates for B-splines and applications to isogeometric analysis.  
Thu1450 Mattia Tani. Isogeometric preconditioners based on fast solvers for the Sylvester equation.

### **Thu1400–1540, LECT261 Mini-Symp: Finite element methods for PDEs in time-dependent domains**

- Thu1400 Björn Stinner. On a phase field approach to PDEs on bubble clusters.  
Thu1425 Robert Nürnberg. Parametric finite element methods for the dynamics of fluidic membranes and vesicles.  
Thu1450 Thomas Ludescher. Stabilized CutFEM for the discretization of two-phase incompressible flows in 3D.  
Thu1515 Freekjan Brink. A Hamiltonian finite element method for nonlinear potential flow free surface waves.

### **Thu1400–1540, HWLL001 Mini-Symp: Boundary-Domain Integral Equations**

- Thu1400 Sergey E. Mikhailov. Segregated Boundary-Domain Integral Equations for Variable-Coefficient Scalar BVPs with General Data.  
Thu1425 Carlos Fresneda Portillo. Boundary Domain Integral Equations for the Mixed Compressible Stokes System with Variable Viscosity in Bounded Domains.  
Thu1450 David Natroshvili. Nonlinear boundary-domain integral equations for scalar quasilinear elliptic PDEs.  
Thu1515 Mirela Kohr. Boundary value problems for a nonlinear Brinkman system with variable coefficients in Sobolev and Besov spaces on Lipschitz domains.

## **Thu1610–1815, LECT061 Mini-Symp: PDE discretisation methods for polygonal and polyhedral meshes**

- Thu1610 Xiu Ye. Weak Galerkin methods and applications.  
Thu1635 Jeffrey S. Ovall. A Nyström-based finite element method on polygonal elements.  
Thu1700 Andrew Gillette. The Serendipity Pyramid Finite Element.  
Thu1725 O. J. Sutton. A posteriori error estimates for the Virtual Element Method.  
Thu1750 Andrea Borio. The Virtual Element Method for Darcy flows in complex geometries.

## **Thu1610–1815, LECT062 Mini-Symp: Finite element methods for convection-dominated problems**

- Thu1610 S. Franz. On the analysis of LPS on S-type meshes for convection-diffusion problems.  
Thu1635 Philipp Schroeder. Semi-robust error estimates of Galerkin-FEM with Scott-Vogelius elements for incompressible non-isothermal flows .  
Thu1700 Samuele Rubino. A local projection stabilization method for natural convection problems.  
Thu1725 Piotr Skrzypacz. A way to improve the solution of Local Projection Stabilization.  
Thu1750 Gunar Matthies. Local projection type stabilisation applied to inf-sup stable discretisations of the Oseen problem.

## **Thu1610–1815, LECT063 Mini-Symp: Adaptive methods and singular solutions of nonlinear problems**

- Thu1610 Dimitra C. Antonopoulou. Finite elements for a class of phase transition problems with noise.  
Thu1635 Fotini Karakatsani. A posteriori error estimates for fully discrete fractional-step  $\vartheta$ -approximations for parabolic equations.  
Thu1700 Thomas P. Wihler. Continuous and Discontinuous Galerkin Time Stepping Methods for Nonlinear Initial Value Problems with Application to Finite Time Blow-Up.  
Thu1725 Michael Neilan. Finite element methods for PDEs in non-divergence form with applications to Hamilton-Jacobi-Bellman equations.

## **Thu1610–1815, LECT064 Mini-Symp: A priori finite element error estimates in optimal control**

- Thu1610 Christian Meyer. A priori and a posteriori error analysis for optimal control of the obstacle problem.  
Thu1635 Gerd Wachsmuth. Optimal convergence order for control constrained optimal control problems.  
Thu1700 Arnd Röscher. Higher order finite elements in optimal control.

## **Thu1610–1815, LECT065 Mini-Symp: Stable FEMs with applications**

- Thu1610 Donald L. Brown. Multiscale Methods in Poroelasticity.  
Thu1635 Neela Nataraj. A *posteriori* error estimates for the finite element approximations of the von Kármán equations.  
Thu1700 Jérôme Droniou. Finite Element – Eulerian Lagrangian Localized Adjoint Method for an oil recovery model: breakdown, and correction.  
Thu1725 Pietro Zanotti. Fully stable and fully consistent nonconforming Galerkin methods.  
Thu1750 Max Jensen. Convergent semi-Lagrangian methods for the Monge-Ampère equation on unstructured grids.

### **Thu1610–1815, LECT066 Mini-Symp: Space-time discretization methods**

- Thu1610 Fatima Al-Shanfari. High-Order Discontinuous Galerkin methods in time for the Wave equation.
- Thu1635 Andrea Moiola. Space-time Trefftz discontinuous Galerkin methods for wave problems.
- Thu1700 Christoph Wintersteiger. Mapped tent pitching method for hyperbolic conservation laws.
- Thu1725 Marco Zank. An Energy Approach to Time-Domain Boundary Integral Equations for the Wave Equation.
- Thu1750 Oluwaseun Lijoka. A Trefftz polynomial space-time discontinuous Galerkin method for the second order wave equation.

### **Thu1610–1815, LECT067 Parallel session:**

- Thu1610 Marco Agnese. Fitted ALE scheme for Two-Phase Navier–Stokes Flow.
- Thu1635 Samuel P. Cox. A-posteriori error estimation of discontinuous Galerkin methods for approximately-divergence-free convection-diffusion problems.
- Thu1700 Luís Pinto. A Coupled Wave-Diffusion Model for Enhanced Drug Delivery.
- Thu1725 Andrea Živčáková. Numerical solution of nonlocal problems.

### **Thu1610–1815, LECT068 Mini-Symp: Numerical methods for optics and photonics**

- Thu1610 Manuel Solano. Numerical simulations of photovoltaic solar cells.
- Thu1635 Peter Monk. Time Dependent Scattering from a Diffraction Grating.
- Thu1700 P.D. Ledger. Electromagnetic Characterisation of Objects using Polarizability Tensors.
- Thu1725 Euan A. Spence. The Helmholtz equation in heterogeneous media: wavenumber-explicit bounds.
- Thu1750 Misun Min. Scalable High-Order Simulations for Transport Equations .

### **Thu1610–1815, LECT261 Mini-Symp: Numerical methods for flow and fractures in subsurface modeling**

- Thu1610 Arne Naegel. Efficient Solvers for Subsurface Flow Problems.
- Thu1635 Stefano Scialò. Non-stationary advection-diffusion problems in networks of fractures with an optimization approach.
- Thu1700 Eirik Keilegavlen. A weakly symmetric finite volume method for elasticity with application to fractures in porous media.
- Thu1725 Kundan Kumar. Iterative methods for coupled flow and geomechanics problems in porous media.
- Thu1750 Ivan Yotov. A Lagrange multiplier method for a Biot-Stokes model of flow in fractured poroelastic media.

### **Thu1610–1815, HWLL001 Mini-Symp: Boundary-Domain Integral Equations**

- Thu1610 Massimo Lanza de Cristoforis. A functional analytic approach to the analysis of homogenization problems.
- Thu1635 B. Tomas Johansson. Numerical solution of the planar Dirichlet problem for an elliptic equation with variable coefficients by an integral equations approach.
- Thu1700 Richards Grzhibovskis. Boundary-domain integral formulation of boundary value problems on surfaces.
- Thu1725 Jan Sladek. The FEM for coated piezoelectric fiber in piezomagnetic matrix.

### **Fri0830–1035, LECT061 Mini-Symp: PDE discretisation methods for polygonal and polyhedral meshes**

- Fri0830 Ilaria Perugia. A plane wave virtual element method for the Helmholtz problem.
- Fri0855 Emmanuil H. Georgoulis. A posteriori error estimates for a discontinuous Galerkin method for interface problems on general domains.
- Fri0920 Zhaonan Dong.  $hp$ -Version space-time discontinuous Galerkin methods for parabolic problems on prismatic meshes .
- Fri0945 Lorenzo Mascotto. The  $hp$  version of Virtual Element Methods for the Poisson problem: approximation of corner singularities.
- Fri1010 Pierre Cantin. A vertex-based scheme on polyhedral meshes for advection-reaction equations with sub-mesh stabilization.

### **Fri0830–1035, LECT062 Mini-Symp: Finite element methods for convection-dominated problems**

- Fri0830 Javier de Frutos. Grad-div stabilization for time-dependent Navier-Stokes equations.
- Fri0855 Bosco García-Archilla. Analysis of first order projection methods for the Navier-Stokes equations.
- Fri0920 Volker John. A review of variational multiscale methods for the simulation of turbulent incompressible flows.
- Fri0945 Philip Lederer. An exact divergence-free reconstruction operator for the Taylor-Hood element.
- Fri1010 Alexander Linke. Towards pressure-robust mixed methods for the incompressible Navier–Stokes equations.

### **Fri0830–1035, LECT063 Mini-Symp: PDE Eigenvalue problems: computational modeling and numerical analysis**

- Fri0830 Xuefeng Liu. A framework of high-precision verified eigenvalue bounds for self-adjoint differential operators.
- Fri0855 Benjamin Stamm. Guaranteed and robust a posteriori bounds for Laplace eigenvalues and eigenvectors.
- Fri0920 Andrea Bonito. Optimality of adaptive finite element methods for eigenvalue clusters.
- Fri0945 Kersten Schmidt. High-order Mortar Finite Element Discretization for PDE Eigenvalue Problems and Error Estimation.
- Fri1010 Ivan Fumagalli. Reduced basis approximation and a posteriori error estimates for parametrized elliptic eigenvalue problems.

### **Fri0830–1035, LECT064 Mini-Symp: Numerical methods for viscous flow in porous media**

- Fri0830 Guido Kanschat. A conservative discretization of Biot’s model for soil consolidation.
- Fri0855 Jeonghun J. Lee. Parameter-robust discretization and preconditioning of Biot’s consolidation model.
- Fri0920 Michael Neilan. Divergence-free-preserving discretizations of incompressible flow.
- Fri0945 Iryna Rybak. Multi-time stepping schemes for coupled porous medium and free flow problems.
- Fri1010 Ricardo Ruiz-Baier. Discontinuous approximation of viscous two-phase flow in heterogeneous porous media.

### **Fri0830–1035, LECT065 Mini-Symp: Stable FEMs with applications**

Fri0830 Guanglian Li. Quasi-optimal Variational Multiscale stabilization of convection-diffusion equations.

Fri0855 Joscha Gedicke. Robust residual-based a posteriori Arnold-Winther mixed finite element analysis in elasticity.

### **Fri0830–1035, LECT066 Mini-Symp: Space-time discretization methods**

Fri0830 Heiko Gimperlein. Time-domain boundary element methods for interface problems.

Fri0855 Matthias Maischak. High-Order Marching-On-In-Time (MOT) for 2D Time Domain Boundary Element Methods (TD-BEM).

Fri0920 Martin Schanz. Time domain boundary element formulation with variable time step size.

Fri0945 Michal Merta. Parallel Time-Domain Boundary Element Method for 3-Dimensional Wave Equation.

### **Fri0830–1035, LECT067 Mini-Symp: Development and application of meshless methods**

Fri0830 J.C. Campbell. Continuum damage mechanics in SPH based on particle interaction area.

Fri0855 Rade Vignjevic. SPH as a nonlocal regularisation method for instabilities due to strain-softening.

Fri0920 N. Djordjevic. Modelling of bird strike on the engine fan blades using FE-SPH.

Fri0945 K. Hughes. Modelling transient fluid loading on flexible structures.

Fri1010 T. De Vuyst. Smoothed particle hydrodynamics modelling of dynamic fracture and fragmentation problems..

### **Fri0830–1035, LECT068 Mini-Symp: Numerical methods for optics and photonics**

Fri0830 Nilima Nigam. Numerical approximation of the Laplace eigenvalues with mixed boundary data.

Fri0855 Eduard Rohan. Numerical modelling of evanescent and propagating modes in phononic structures.

Fri0920 Ying He. Positivity preserving discontinuous galerkin method for drift-diffusion system.

Fri0945 Catalin Turc. Window Green Function Methods for the solution of wave propagation problems in periodic media.

Fri1010 Lin Zschiedrich. Application of Finite Elements in Nano-Optics.

### **Fri0830–1035, LECT261 Mini-Symp: Finite element methods for PDEs in time-dependent domains**

Fri0830 Monika Balázsová. Stability analysis of the space-time discontinuous Galerkin method for nonstationary problems in time-dependent domains.

Fri0855 Andreas Hahn. Ale finite element method for two-phase flows with surfactants..

Fri0920 Shweta Srivastava. Local projection stabilization with discontinuous Galerkin method in time applied to transient scalar equation in time dependent domains.

Fri0945 Sashikumaar Ganesan. An assessment of time discretizations for scalar PDEs in time-dependent domains.

### **Fri0830–1035, HWLL001 Mini-Symp: Higher order space-time finite element methods**

Fri0830 Boris Vexler. Discrete maximal parabolic regularity and best approximation results for Galerkin finite element solutions of parabolic problems.

Fri0855 Rob Stevenson. Adaptive wavelet methods for space-time variational formulations of evolutionary PDEs.

Fri0920 Simon Shaw. Space-time Galerkin approximation of wave propagation in dispersive media.

## Times and rooms of speakers

Wed1425, LECT261 Acosta, Gabriel	Tue1515, LECT063 Camaño, Jessika
Wed1035, HWLL001 Adler, James H.	Fri0830, LECT067 Campbell, J.C.
Thu1610, LECT067 Agnese, Marco	Wed1725, LECT063 Cangiani, Andrea
Wed1515, LECT064 Aimi, Alessandra	Fri1010, LECT061 Cantin, Pierre
Tue0945, HWLL001 Ainsworth, Mark	Wed0945, LECT066 Cardoso, R. P.R.
Thu1610, LECT066 Al-Shanfari, Fatima	Wed1725, LECT061 Caucao, Sergio
Wed1635, LECT062 Albella, J.	Wed1610, LECT065 Chen, Hongtao
Thu0920, LECT066 Alfano, Giulio	Tue1400, LECT065 Chen, Long
Wed1635, LECT061 Alvarez, Mario	Wed1425, HWLL001 Chen, Long
Thu0830, LECT061 Antonietti, Paola F.	Wed1035, LECT066 Chen, Yanlai
Tue1540, LECT062 Antonietti, Paola F.	Wed1700, LECT062 Chovan, Jaroslav
Thu1610, LECT063 Antonopoulou, Dimitra C.	Wed1450, LECT068 Christophe, Alexandra
Thu0830, LECT064 Apel, Thomas	Wed0920, LECT261 Chrysafinos, Konstantinos
Wed1125, LECT063 Araya, Rodolfo	Thu1450, LECT064 Chrysafinos, Konstantinos
Wed1035, LECT063 Arbogast, Todd	Wed1400, LECT261 Ciarlet, Jr., P.
Thu1515, LECT067 Argyridou, Eleni	Thu1635, LECT067 Cox, Samuel P.
Wed1725, LECT261 Armentano, María Gabriela	Wed1400, LECT067 Demkowicz, Leszek
Wed1810, HWLL001 Arnold, Douglas N.	Fri1010, LECT067 De Vuyst, T.
Wed1200, HWLL001 Auricchio, Ferdinando	Tue1425, LECT065 Di, Ya-na
Wed1100, LECT063 Awanou, Gerard	Wed1400, LECT068 Di Pietro, Daniele A.
Thu1425, LECT063 Awanou, Gerard	Thu0920, LECT061 Di Pietro, Daniele A.
Wed1400, HWLL001 Bacuta, Constantin	Thu0855, LECT066 Diehl, Patrick
Thu0945, LECT062 Badia, Santiago	Wed1515, LECT061 Diening, Lars
Fri0830, LECT261 Balázsová, Monika	Wed0830, LECT062 Discacciati, Marco
Wed0830, LECT061 Banz, Lothar	Wed1610, LECT061 Discacciati, Marco
Thu1400, LECT067 Barbeiro, Sílvia	Fri0920, LECT067 Djordjevic, N.
Thu1425, LECT065 Barrenechea, Gabriel R.	Wed0920, LECT068 Djurdjevac, Ana
Thu0920, LECT062 Barrenechea, Gabriel R.	Tue1425, LECT064 Docampo Sánchez, Julia
Thu1400, LECT063 Bartels, Sören	Wed1515, LECT068 Dong, Bo
Thu0945, HWLL001 Bause, Markus	Fri0920, LECT061 Dong, Zhaonan
Thu1450, LECT061 Beirão da Veiga, Lourenço	Wed1450, HWLL001 Draganescu, Andrei
Tue1100, HWLL001 Belak, James	Thu0945, LECT061 Droniou, Jérôme
Wed1100, HWLL001 Benson, Thomas R.	Thu1700, LECT065 Droniou, Jérôme
Wed1035, LECT068 Berggren, Martin	Wed0855, LECT063 Edwards, Michael G
Wed0830, HWLL001 Bertrand, F.	Tue1450, LECT068 Eigel, Martin
Tue1540, LECT063 Boffi, Daniele	Tue1515, LECT067 Eikeland, Erik
Wed0855, LECT067 Bonazzoli, Marcella	Wed1125, HWLL001 Emerson, D. B.
Thu0855, LECT063 Bonito, Andrea	Wed1610, LECT062 Engström, Christian
Fri0920, LECT063 Bonito, Andrea	Wed1125, LECT061 Erath, Christoph
Tue1400, HWLL001 Bonito, Andrea	Wed1100, LECT067 Eyere, Emagbetere
Wed0920, LECT063 Boon, Wietse M.	Wed1125, LECT062 Fabre, Mathieu
Thu1750, LECT061 Borio, Andrea	Wed1035, LECT065 Faustmann, Markus
Thu1515, LECT066 Borker, Raunak	Tue1400, LECT261 Feistauer, Miloslav
Wed1450, LECT261 Borthagaray, Juan Pablo	Thu1010, HWLL001 Feistauer, Miloslav
Wed1635, LECT064 Bracco, Cesare	Wed0855, LECT062 Fernández, Miguel A.
Wed1100, LECT261 Brenner, Andreas	Thu1610, LECT062 Franz, S.
Thu1400, LECT061 Brezzi, Franco	Wed1100, LECT066 Frean, Daniel
Thu1515, LECT261 Brink, Freekjan	Wed1100, LECT068 Frei, Stefan
Thu1610, LECT065 Brown, Donald L.	Fri0830, LECT062 Frutos, Javier de
Wed1725, LECT068 Bustinza, Rommel	Wed1635, LECT068 Fu, Guosheng
Thu1010, LECT068 Calabrò, Francesco	Wed1425, LECT067 Fuentes, Federico

Wed1450, LECT067 Führer, Thomas  
 Fri1010, LECT063 Fumagalli, Ivan  
 Tue1425, LECT063 Gallistl, Dietmar  
 Thu1515, LECT065 Gallistl, Dietmar  
 Wed1610, LECT066 Gander, Martin J.  
 Fri0945, LECT261 Ganesan, Sashikumaar  
 Wed1125, LECT068 Gangl, Peter  
 Wed1450, LECT064 Gantner, Gregor  
 Fri0855, LECT062 García-Archilla, Bosco  
 Thu1450, LECT065 Gastaldi, Lucia  
 Wed0855, LECT061 Gedicke, Joscha  
 Fri0855, LECT065 Gedicke, Joscha  
 Fri0855, LECT061 Georgoulis, Emmanuil H.  
 Wed1035, LECT067 Gibbs, Andrew  
 Wed1400, LECT063 Gillette, Andrew  
 Thu1700, LECT061 Gillette, Andrew  
 Fri0830, LECT066 Gimperlein, Heiko  
 Wed1725, LECT066 Glas, Silke  
 Wed1125, LECT067 Godoy, Eduardo  
 Wed1515, LECT065 Gong, Wei  
 Wed1125, LECT261 Gorynina, Olga  
 Wed1450, LECT062 Grubišić, Luka  
 Thu1700, HWLL001 Grzhibovskis, Richards  
 Tue1450, LECT063 Guermond, Jean-Luc  
 Thu1010, LECT062 Guermond, Jean-Luc  
 Wed1425, LECT061 Haberl, Alexander  
 Fri0855, LECT261 Hahn, Andreas  
 Fri0920, LECT068 He, Ying  
 Wed0920, LECT062 Heltai, Luca  
 Tue1450, LECT261 Heltai, Luca  
 Thu1100, HWLL001 Hesthaven, J.S.  
 Thu0855, LECT067 Heuer, Norbert  
 Wed1100, LECT065 Hiptmair, R.  
 Thu1400, LECT066 Hiptmair, R.  
 Wed1125, LECT064 Hofreither, Clemens  
 Fri0945, LECT067 Hughes, K.  
 Tue1425, LECT062 Jensen, Max  
 Thu1750, LECT065 Jensen, Max  
 Wed1400, LECT065 Ji, Xia  
 Wed0920, LECT066 Jin, Bangti  
 Thu1635, HWLL001 Johansson, B. Tomas  
 Fri0920, LECT062 John, Volker  
 Wed0920, LECT067 Jolivet, Pierre  
 Thu0945, LECT064 Jordan, Tobias  
 Wed1425, LECT065 Kahle, Christian  
 Fri0830, LECT064 Kanschat, Guido  
 Thu1400, LECT065 Kanschat, Guido  
 Tue1400, LECT062 Karakashian, Ohannes  
 Thu1635, LECT063 Karakatsani, Fotini  
 Thu1425, LECT067 Karátson, János  
 Tue1450, LECT062 Katsaounis, Theodoros  
 Tue1515, LECT062 Katsaounis, Theodoros  
 Thu1700, LECT261 Keilegavlen, Eirik  
 Thu0830, LECT067 Keith, Brendan  
 Tue1450, LECT064 Kirby, Robert M.  
 Thu0855, LECT062 Knobloch, Petr  
 Thu1515, HWLL001 Kohr, Mirela  
 Thu0830, LECT062 Kopteva, Natalia  
 Wed1035, LECT261 Kopteva, Natalia  
 Wed1700, LECT066 Krause, Rolf  
 Wed1035, LECT061 Kreuzer, Christian  
 Thu0920, LECT063 Kreuzer, Christian  
 Thu1725, LECT261 Kumar, Kundan  
 Wed0830, LECT067 Kwok, Felix  
 Thu1450, LECT062 Lakkis, Omar  
 Thu1425, LECT066 Langdon, Stephen  
 Thu0830, LECT068 Langer, Ulrich  
 Thu1610, HWLL001 Lanza de Cristoforis, Massimo  
 Tue1400, LECT066 Lazarov, Raytcho  
 Fri0945, LECT062 Lederer, Philip  
 Thu1700, LECT068 Ledger, P.D.  
 Fri0855, LECT064 Lee, Jeonghun J.  
 Thu1010, LECT261 Lee, Sanghyun  
 Wed1635, LECT065 Lehrenfeld, Christoph  
 Thu1425, LECT061 Lehrenfeld, Christoph  
 Thu1425, LECT064 Leykekhman, Dmitriy  
 Wed1635, LECT261 Leykekhman, Dmitriy  
 Fri0830, LECT065 Li, Guanglian  
 Thu1750, LECT066 Lijoka, Oluwaseun  
 Fri1010, LECT062 Linke, Alexander  
 Thu0855, LECT061 Lipnikov, Konstantin  
 Fri0830, LECT063 Liu, Xuefeng  
 Thu0945, LECT068 Lohfink, Anna-Pia  
 Tue1400, LECT067 Loisel, Sébastien  
 Wed1515, LECT063 Loula, Abimael F. D.  
 Thu1450, LECT261 Ludescher, Thomas  
 Thu1010, LECT064 Mai, Edwin  
 Fri0855, LECT066 Maischak, Matthias  
 Thu1400, LECT062 Makridakis, Charalambos  
 Wed1100, LECT064 Manni, Carla  
 Thu0920, LECT068 Mantzaflaris, Angelos  
 Wed1400, LECT064 Mantzaflaris, Angelos  
 Wed1450, LECT063 Manzini, Gianmarco  
 Wed1425, LECT063 Marini, L. Donatella  
 Wed0945, LECT067 Markopoulos, Alexandros  
 Fri0945, LECT061 Mascotto, Lorenzo  
 Thu1750, LECT062 Matthies, Gunar  
 Thu0855, HWLL001 Matthies, Gunar  
 Wed0830, LECT066 McLean, William  
 Wed1125, LECT066 Meng, Xiong  
 Fri0945, LECT066 Merta, Michal  
 Thu1425, LECT062 Metcalfe, Stephen  
 Wed0920, HWLL001 Meyer, Christian  
 Thu1610, LECT064 Meyer, Christian  
 Wed1125, LECT065 Michel, Christian  
 Thu1400, HWLL001 Mikhailov, Sergey E.

Thu1750, LECT068 Min, Misun  
 Wed1425, LECT066 Mohamed, M. Shadi  
 Thu1635, LECT066 Moiola, Andrea  
 Thu0855, LECT068 Möller, Matthias  
 Wed1400, LECT066 Monk, Peter  
 Thu1635, LECT068 Monk, Peter  
 Wed1700, LECT061 Mora, David  
 Wed1700, LECT067 Muga, Ignacio  
 Thu0830, LECT066 Mustapha, Kassem  
 Thu1610, LECT261 Naegel, Arne  
 Thu1635, LECT065 Nataraj, Neela  
 Tue1425, HWLL001 Nataraj, Neela  
 Thu1450, HWLL001 Natroshvili, David  
 Tue1450, HWLL001 Neilan, Michael  
 Fri0920, LECT064 Neilan, Michael  
 Thu1725, LECT063 Neilan, Michael  
 Wed1635, LECT066 Neumüller, Martin  
 Tue1425, LECT067 Nguyen, Hieu  
 Fri0830, LECT068 Nigam, Nilima  
 Tue1400, LECT063 Nigam, Nilima  
 Thu0830, LECT065 Niino, Kazuki  
 Thu1425, LECT261 Nürnberg, Robert  
 Tue1650, ESGWAud Oden, J. Tinsley  
 Wed0830, LECT065 Of, Günther  
 Wed1425, LECT062 Ovall, Jeffrey S.  
 Thu1635, LECT061 Ovall, Jeffrey S.  
 Wed1515, LECT062 Oyarzúa, Ricardo  
 Tue1450, LECT066 Pasciak, Joseph E.  
 Tue1425, LECT261 Patel, Ajit  
 Wed1610, LECT068 Peraire, Jaime  
 Tue1145, HWLL001 Peraire, Jaime  
 Fri0830, LECT061 Perugia, Ilaria  
 Tue1400, LECT064 Peters, Jörg  
 Wed0830, LECT064 Peters, Jörg  
 Tue1400, LECT061 Peterseim, Daniel  
 Wed1610, LECT064 Peterseim, Daniel  
 Wed1610, LECT261 Pfefferer, Johannes  
 Thu1700, LECT067 Pinto, Luís  
 Wed1635, LECT063 Pollock, Sara  
 Thu1425, HWLL001 Portillo, Carlos Fresneda  
 Tue1425, LECT068 Powell, Catherine E.  
 Thu0830, LECT063 Praetorius, Dirk  
 Tue1515, LECT068 Pranjali,  
 Wed0945, LECT261 Pryer, Tristan  
 Thu1515, LECT062 Pryer, Tristan  
 Thu0920, HWLL001 Radu, Florin A.  
 Tue1515, LECT061 Rankin, Richard  
 Wed0920, LECT064 Ratnani, Ahmed  
 Wed1400, LECT062 Richter, Thomas  
 Wed0855, LECT065 Rieder, Alexander  
 Tue1450, LECT061 Riedlbeck, Rita  
 Wed0920, LECT065 Rjasanow, Sergej  
 Wed1635, LECT067 Roberts, Nathan V.  
 Fri0855, LECT068 Rohan, Eduard  
 Thu1700, LECT064 Rösch, Arnd  
 Thu1700, LECT062 Rubino, Samuele  
 Fri1010, LECT064 Ruiz-Baier, Ricardo  
 Fri0945, LECT064 Rybak, Iryna  
 Wed1700, LECT063 Salgado, Abner J.  
 Tue1515, LECT066 Salgado, Abner J.  
 Wed1725, LECT062 Sanches, Rodolfo André Kuche  
 Wed0945, HWLL001 Sander, Oliver  
 Thu0920, LECT064 Sandilya, Ruchi  
 Wed1035, LECT062 Scacchi, Simone  
 Fri0920, LECT066 Schanz, Martin  
 Tue1515, HWLL001 Schedensack, Mira  
 Thu0830, HWLL001 Schieweck, Friedhelm  
 Wed0830, LECT068 Schillings, Claudia  
 Thu0855, LECT065 Schmidt, Kersten  
 Fri0945, LECT063 Schmidt, Kersten  
 Wed1100, LECT062 Schöberl, Joachim  
 Tue1540, LECT061 Schröder, Andreas  
 Thu1635, LECT062 Schroeder, Philipp  
 Thu1635, LECT261 Scialò, Stefano  
 Wed1035, LECT064 Serra-Capizzano, Stefano  
 Fri0920, HWLL001 Shaw, Simon  
 Wed1700, LECT068 Shen, Jiguang  
 Fri1145, HWLL001 Sherwin, Spencer  
 Wed1425, LECT068 Shi, Ke  
 Tue1400, LECT068 Silvester, David  
 Thu1400, LECT068 Simeon, Bernd  
 Thu1725, LECT062 Skrzypacz, Piotr  
 Thu1725, HWLL001 Sladek, Jan  
 Tue1425, LECT061 Smears, Iain  
 Thu1610, LECT068 Solano, Manuel  
 Thu0945, LECT066 Sousa, Ercí lia  
 Wed1425, LECT064 Speleers, Hendrik  
 Thu1725, LECT068 Spence, Euan A.  
 Tue1450, LECT067 Spillane, Nicole  
 Fri0920, LECT261 Srivastava, Shweta  
 Fri0855, LECT063 Stamm, Benjamin  
 Wed1450, LECT066 Stark, David  
 Wed1725, LECT067 Starke, Gerhard  
 Wed1450, LECT061 Stevenson, Rob  
 Wed1610, LECT067 Stevenson, Rob  
 Fri0855, HWLL001 Stevenson, Rob  
 Thu1400, LECT261 Stinner, Björn  
 Wed0830, LECT261 Stinner, Björn  
 Thu0830, LECT261 Sun, Shuyu  
 Thu1725, LECT061 Sutton, O. J.  
 Wed1700, LECT261 Swierczynski, Piotr  
 Thu1425, LECT068 Takacs, Stefan  
 Thu1450, LECT068 Tani, Mattia  
 Wed0855, LECT068 Teckentrup, Aretha  
 Wed0920, LECT061 Tittarelli, R.  
 Thu0855, LECT261 Touloupoulos, Ioannis



Wed0855, LECT064 Touloupoulos, Ioannis  
 Wed1515, LECT066 Trevelyan, Jon  
 Fri0945, LECT068 Turc, Catalin  
 Thu1450, LECT067 Türk, Önder  
 Wed0945, LECT068 Ullmann, Elisabeth  
 Wed1400, LECT061 van der Zee, Kristoffer G.  
 Wed1515, LECT067 van der Zee, Kristoffer G.  
 Wed0945, LECT064 van Opstal, Timo M.  
 Thu0920, LECT261 Vasilyeva, Maria  
 Wed1515, HWLL001 Vassilevski, Panayot S.  
 Thu0945, LECT063 Veesser, Andreas  
 Wed1100, LECT061 Veesser, Andreas  
 Wed0855, LECT261 Venkataraman, Chandrasekhar  
 Thu1010, LECT061 Verani, Marco  
 Wed0945, LECT062 Vergara, Christian  
 Fri0830, HWLL001 Vexler, Boris  
 Thu1400, LECT064 Vexler, Boris  
 Fri0855, LECT067 Vignjevic, Rade  
 Fri1100, HWLL001 Vignjevic, Rade  
 Wed0945, LECT061 Vohralík, Martin  
 Wed1610, LECT063 Vohralík, Martin  
 Thu0855, LECT064 Wachsmuth, Daniel  
 Thu1635, LECT064 Wachsmuth, Gerd  
 Tue1425, LECT066 Wang, Hong  
 Thu1515, LECT061 Wang, Junping  
 Wed0945, LECT065 Weißer, Steffen  
 Thu1450, LECT066 Wendland, Holger  
 Wed0830, LECT063 Wheeler, Mary F.  
 Thu0945, LECT261 Wick, Thomas  
 Wed0855, HWLL001 Wieners, Christian  
 Thu1700, LECT063 Wihler, Thomas P.  
 Thu1700, LECT066 Wintersteiger, Christoph  
 Thu1145, HWLL001 Wohlmuth, Barbara  
 Thu1515, LECT064 Wollner, Winnifried  
 Wed1515, LECT261 Wollner, Winnifried  
 Wed1700, LECT065 Xi, Yingxia  
 Tue1515, LECT065 Xie, Hehu  
 Tue1450, LECT065 Xu, Yifeng  
 Wed0855, LECT066 Yan, Yubin  
 Thu1610, LECT061 Ye, Xiu  
 Wed1610, HWLL001 Yi, Son-Young  
 Wed1450, LECT065 Yin, Xiaobo  
 Wed0945, LECT063 Yotov, Ivan  
 Thu1750, LECT261 Yotov, Ivan  
 Thu1725, LECT066 Zank, Marco  
 Thu1725, LECT065 Zanotti, Pietro  
 Wed1725, LECT065 Zhang, Shuo  
 Wed1635, HWLL001 Zhu, Yunrong  
 Thu1725, LECT067 Živčáková, Andrea  
 Fri1010, LECT068 Zschiedrich, Lin  
 Wed1700, HWLL001 Zulehner, Walter