

Computational Modeling of Fracture and Failure of Materials and Structures

CFRAC 2013, 5 - 7 June, Prague, Czech Republic



PROGRAM

CFRAC 2013 – Plenary Lectures and Program Overview

Tuesday, 4 June 2013

15:00-19:00 Registration and welcome drink

Wednesday, 5 June 2013

9:15-9:45 Conference opening session
9:45-10:30 Plenary lecture B. Li, A. Pandolfi*, M. Ortiz:
Convergent erosion schemes for three-dimensional fracture and fragmentation
11:00-12:50 Parallel sessions PND-I, EFE-I, FCM-I, DuF-I, CIE-I
14:00-15:50 Parallel sessions PND-II, EFE-II, FCM-II, DuF-II, CIE-II
16:10-18:10 Parallel sessions PND-III, CFM-I, FCM-III, DuF-III
19:30-22:00 Concert and reception in Bethlehem Chapel

Thursday, 6 June 2013

9:00-9:45 Plenary lecture J.M.A. César de Sá*, F.M. Andrade Pires, F.X.C. Andrade, L. Malcher, M.R.R. Seabra:
Issues on ductile failure modelling: Stress state dependence, non-locality and damage to fracture transition
9:45-10:30 Plenary lecture M. Pagani, U. Perego*:
Finite element simulations of cutting processes of thin-walled structures
11:00-12:50 Parallel sessions CFM-II, EFE-III, IAV-I, IAF-I, PND-IV
14:00-15:50 Parallel sessions DFQ-I, DyF-I, IAV-II, PFC-I, TCC-I
16:20-18:10 Parallel sessions DFQ-II, DyF-II, IAV-III, PFC-II, TCC-II
20:00-22:30 Conference dinner in Richter's Villa

Friday, 7 June 2013

9:00-9:45 Plenary lecture J.-F. Molinari*:
Dynamic fracture: Discrete versus continuum damage modeling
9:45-10:30 Plenary lecture Z.P. Bažant*, M.H. Hubler, M. Salviato, K. Kirane, J.-L. Le:
Fracture scaling and safety of quasibrittle structures: Atomistic basis, computational challenges and new advances
11:00-12:50 Parallel sessions DFQ-III, DyF-III, AEM-I, PFC-III, TCC-III
14:00-15:50 Parallel sessions DFQ-IV, DyF-IV, AEM-II

CFRAC 2013 – Parallel Sessions, Wednesday, 5 June 2013

PND **Phase-Field and Nonlocal Damage Approaches to Fracture**
organized by C. Miehe and N. Moës

EFE **Enriched Finite Element Formulations to Capture Cracks, Material Interfaces and Multiscale Phenomena**
organized by J. Alfaiate, D. Dias da Costa and L. J. Sluys

FCM **Failure in Composite Materials Through the Length Scales**
organized by P. P. Camanho, S. Hallett and J. Remmers

DuF **Ductile Fracture: Physical Mechanisms and Computational Challenges**
organized by P.-O. Bouchard, J. M. A. César de Sá and R. H. J. Peerlings

CIE **Cracking Induced by Environmental Processes**
organized by I. Carol, G. Hofstetter and K. Willam

CFM **Cohesive Fracture Models**
organized by F. Gatuíngt and J.-F. Molinari

Room	C215	C217	C219	C221	C223
Session	PND-I	EFE-I	FCM-I	DuF-I	CIE-I
Mini-symp.	Phase-Field and Nonlocal Damage Approaches to Fracture	Enriched Finite Element Formulations to Capture Cracks, Material Interfaces and Multiscale Phenomena	Failure in Composite Materials Through the Length Scales	Ductile Fracture: Physical Mechanisms and Computational Challenges	Cracking Induced by Environmental Processes
Chair	N. Moës	J. Alfaiate	J. Remmers	J.M.A. César de Sá	G. Hofstetter
11:00	A. Karma*, A. Pons: <i>Phase-field modeling of brittle fracture: Geometrically complex crack paths beyond the principle of local symmetry (keynote lecture)</i>	M. Holl*, S. Loehnert, P. Wriggers, M. Nicolaus: <i>Three-dimensional crack propagation in ductile media using the XFEM (keynote lecture)</i>	F.P. van der Meer*, L.J. Sluys: <i>The influence of friction and plasticity on mode II delamination fracture toughness (keynote lecture)</i>	M. Brünig*, S. Gerke, V. Hagenbrock: <i>Micro-mechanical numerical analyses on the effect of stress state on ductile damage and failure (keynote lecture)</i>	G. Xotta, K. Willam*, C.E. Majorana, V.A. Salomoni: <i>A thermo-hygro-mechanical model of concrete deterioration due to alkali-silica reaction</i>
11:10					
11:20					R. Esposito*, M.A.N. Hendriks: <i>Multiscale material model for ASR-affected concrete structures</i>
11:30	C. Kuhn*, R. Müller: <i>On the interpretation of parameters in phase field fracture models</i>	S. Müller*, M. Kästner, V. Ulbricht: <i>3D XFEM modeling of composite failure combining discrete and diffuse damage</i>	D. Leguillon*, E. Martin, Z. Aboura: <i>Intermittent crack growth along the interface in a woven composite</i>	L. Zybell*, G. Hütter, T. Linse, U. Mühlich, M. Kuna: <i>Micromechanical analysis of size effects in ductile failure</i>	
11:40					J. Ožbolt, F. Oršanić*, G. Balabanić: <i>Damage of concrete caused by corrosion of reinforcement: 3D coupled FE model</i>
11:50	V. Ziaei-Rad, Y. Shen*: <i>Using massively parallel processors to simulate crack propagation problems with the phase-field formulation</i>	A. Karamnejad, V.P. Nguyen, L.J. Sluys*: <i>Modelling crack propagation in heterogeneous materials using a computational homogenization method</i>	M.F. Pernice*, L.F. Kawashita, S.R. Hallett: <i>Modelling of delamination migration in DCB test on multidirectional composite laminates</i>	L. Morin*, J.B. Leblond, D. Kondo: <i>A Gurson-type criterion for plastically anisotropic material containing general ellipsoidal voids</i>	
12:00					I. Carol*: <i>Cracking of concrete under environmental processes using zero-thickness interface elements</i>
12:10	A. Abdollahi*, I. Arias: <i>A computational study of fracture in multilayer ferroelectric actuators</i>	J. Retama*, G. Ayala: <i>Reinforced concrete modelling using enriched finite elements</i>	A. Piccolroaz*, L. Morini, G. Mishuris, E. Radi: <i>Integral identities for a semi-infinite interfacial crack in 2D and 3D elasticity</i>	P.-O. Bouchard*, E. Roux, M. Bernacki: <i>Finite element modeling of void nucleation, growth and coalescence for large plastic strain and complex loading paths</i>	
12:20					
12:30	C. Miehe*, L. Schänzel, H. Ulmer, H. Dal: <i>Phase field modeling of brittle and ductile fracture at finite strains: Formulation of failure criteria and multi-physics extensions</i>	C. Fernandes, D. Dias-da-Costa*, J. Alfaiate, E. Júlio: <i>Simulation of steel fibre reinforced concrete behaviour using discrete crack approach</i>	G. Alfano*, M. Musto: <i>A rate-dependent cohesive-zone model capturing stick-slip crack propagation</i>	V.G. Kouznetsova*, F. Maresca, M.G.D. Geers: <i>Understanding apparent ductility of martensite in dual phase steels</i>	
12:40					

Room	C215	C217	C219	C221	C223
Session	PND-II	EFE-II	FCM-II	DuF-II	CIE-II
Mini-symp.	Phase-Field and Nonlocal Damage Approaches to Fracture	Enriched Finite Element Formulations to Capture Cracks, Material Interfaces and Multiscale Phenomena	Failure in Composite Materials Through the Length Scales	Ductile Fracture: Physical Mechanisms and Computational Challenges	Cracking Induced by Environmental Processes
Chair	C. Miehe	L.J. Sluys	P.P. Camanho	P.-O. Bouchard	K. Willam
14:00	F. Dufour*, C. Giry, J. Mazars: <i>Advanced nonlocal FE modelling to assess crack properties (keynote lecture)</i>	M. Fagerström*, S. Mostofizadeh, R. Larsson: <i>Subscale enrichment of discontinuity for XFEM crack tip element (keynote lecture)</i>	H.E. Pettermann*, J. Gager, M. Meindlhumer, M. Schwab: <i>Damage evolution predictions in large laminated composite structures (keynote lecture)</i>	S. Feld-Payet*, V. Chiaruttini, F. Feyel: <i>A crack insertion strategy based on a gradient-type criterion and local remeshing</i>	Y. Theiner, G. Hofstetter*: <i>Investigation of rehabilitating a deteriorated RC bridge</i>
14:10					
14:20				J.J.C. Remmers*, R. de Borst, C.V. Verhoosel, A. Needleman: <i>Simulating ductile crack growth using the cohesive band model</i>	A.J. Lew*, R. Rangarajan, M. Hunsweck, Y. Shen: <i>Universal meshes for the simulation of hydraulic fractures</i>
14:30	E. Tamayo-Mas, A. Rodríguez-Ferran*: <i>A new combined strategy for modelling failure: From smoothed displacements to cohesive cracks</i>	G. Juárez-Luna*, G. Ayala: <i>Mixed finite elements with prescribed primary and secondary variables</i>	F.D. Morinière*, R.C. Alderliesten, R. Benedictus: <i>Analytical and numerical modeling of the impact behaviour of fibre-metal laminates</i>		
14:40				L. Wu*, G. Becker, L. Noels: <i>Modeling of damage to crack transition using a coupled discontinuous Galerkin / cohesive extrinsic law framework</i>	Z. Zhang*, Z.W. Zhang, H.Y. Liu, H.W. Zhang: <i>Numerical studies of remanufacture of cracked impeller</i>
14:50	E. Lorentz*, K. Kazymyrenko: <i>Fracture of concrete: Nonlocal damage laws and the fictitious crack model</i>	S. Valente*, A. Alberto: <i>Cohesive-frictional crack model applied to dam-foundation joint</i>	H. Yazdani Nezhad, C.T. McCarthy*, F. Merwick, R. M. Frizzell: <i>Study of impact damage response of fibre-reinforced polymer composites</i>		
15:00				D. Gloger*, M. Enderlein, M. Kuna: <i>Error analysis for submodels with cracks: Extension to elastic-plastic material</i>	C.E. Majorana*, V.A. Salomoni, G. Xotta, B. Pomaro, F. Gramegna: <i>Meso-level modeling of concrete under nuclear radiation</i>
15:10	A. Simone*: <i>Advances in gradient-enhanced damage models with evolving length scale</i>	J. Alfaiate*, D. Dias-da-Costa, C.I. Almeida Paulo, L.J. Sluys: <i>On the use of discontinuous damage models for mixed-mode fracture</i>	A. Forghani, L. Bindeman, R. Vaziri*: <i>Numerical simulation of damage in laminated composite structures under lateral impact</i>		
15:20				V. Riolo*, J. Guille, V. Chiaruttini: <i>Crack driving forces and fatigue crack propagation in elastic-plastic materials</i>	
15:30		C.D. Foster*, D.A. Weed: <i>Enhanced finite element modeling of earthen structural materials with weak interfaces</i>			
15:40					

Room	C215	C217	C219	C221	C223
Session	PND-III	CFM-I	FCM-III	DuF-III	-
Mini-symp.	Phase-Field and Nonlocal Damage Approaches to Fracture	Cohesive Fracture Models	Failure in Composite Materials Through the Length Scales	Ductile Fracture: Physical Mechanisms and Computational Challenges	
Chair	N. Moës	J.-F. Molinari	S. Hallett	R.H.J. Peerlings	
16:10	M. Hamed*, K. Saanouni: <i>Advanced nonlocal elastoplastic constitutive equations in the framework of the micromorphic continua</i>	C.G. Panagiotopoulos*, V. Mantič, T. Roubíček: <i>Application of a vanishing viscosity procedure to a fiber-matrix debonding problem</i>	P.P. Camanho*, M.A. Bessa, G. Catalanotti, M. Vogler: <i>A plastic smeared crack model for polymer-matrix composites</i>	J. Besson*: <i>A two length scale non-local model to describe ductile rupture at low stress triaxiality</i>	
16:20					
16:30	P. Sicsic*, B. Bourdin, J.-J. Marigo, C. Maurini: <i>Crack periodicity in the thermal shock setting: A gradient damage model</i>	N. Hajibeik*, L. De Lorenzis, P. Wriggers: <i>Isogeometric analysis of mode-I delamination in composites</i>	D.F. Mora*, C. González, C.S. Lopes: <i>Computational micromechanical model of ply failure: Matrix cracking, delamination and crack density</i>	G. Mirone*: <i>Ductility of an X100 steel under different triaxiality and Lode angle histories: Axisymmetric and C(T) fracture specimens</i>	
16:40					
16:50	N. Van Goethem*: <i>Damage-based fracture in brittle materials with shape optimization methods</i>	N. Rakotomalala*, F. Feyel, A. Roos, A. Longuet: <i>Towards a coupled thermo-mechanical numerical model of TBC delamination</i>	E. Baranger*, J. Lopez, O. Allix, N. Feld, J.-M. Guimard, C. Ha Minh: <i>Multiscale modeling of kinking in CFRPs: Validation and competition between damage mechanisms</i>	A. Mota*, W. Sun, J.T. Ostien, J.W. Foulk III, K.N. Long: <i>Lie-group interpolation and variational recovery for internal variables</i>	
17:00					
17:10	M. Soufflet, G. Jouan, P. Kotronis*, F. Collin: <i>Applying a second gradient theory on reinforced concrete structural elements</i>	M. Vocialta*, J.-F. Molinari: <i>Influence of contact in fragmentation phenomena</i>	J. Reinoso*, A. Blázquez, A. Estefani, F. París, J. Cañas: <i>Global-local numerical characterization of damage tolerance of a composite runout specimen subjected to tensile loading conditions</i>		
17:20					
17:30		S. Wen*, Y. Monerie, B. Wattrisse: <i>Identification of cohesive zone models from thermomechanical imaging techniques</i>	A.V. Zaitsev*, A.V. Kislitsyn, V.S. Koksharov, Yu.V. Sokolkin: <i>Computational models for the description of multi-particle interactions in random structures, meso- and macrofailure of unidirectional fibre-reinforced composites</i>		
17:40					
17:50		A. Esmaeili*, A. Javili, P. Steinmann: <i>A cohesive zone model coupled with in-plane stretch of an interface</i>			
18:00					

CFRAC 2013 – Parallel Sessions, Thursday, 6 June 2013

- CFM** **Cohesive Fracture Models**
organized by F. Gatuingt and J.-F. Molinari
- EFE** **Enriched Finite Element Formulations to Capture Cracks, Material Interfaces and Multiscale Phenomena**
organized by J. Alfaiate, D. Dias da Costa and L. J. Sluys
- IAV** **Industrial Applications and Validation of Fracture Models**
organized by J. C. Gálvez and S. Guinard
- IAF** **Isogeometric Analysis of Failure in Solids and Structures**
organized by R. de Borst and C. V. Verhoosel
- PND** **Phase-Field and Nonlocal Damage Approaches to Fracture**
organized by C. Miehe and N. Moës
- DFQ** **Damage and Fracture of Quasibrittle Materials**
organized by I. Carol and G. Pijaudier-Cabot
- DyF** **Dynamic Fracture**
organized by A. Combescure and J. Ožbolt
- PFC** **Present and Future of Crack Tracking Algorithms**
organized by M. Ortiz and A. Pandolfi
- TCC** **Two-Scale Coupled Computational Approaches Towards Failure and Fracture**
organized by M. G. D. Geers, A. E. Huespe, S. Loehnert, X. Oliver and P. Wriggers

Room	C215	C217	C219	C221	C223
Session	CFM-II	EFE-III	IAV-I	IAF-I	PND-IV
Mini-symp.	Cohesive Fracture Models	Enriched Finite Element Formulations to Capture Cracks, Material Interfaces and Multiscale Phenomena	Industrial Applications and Validation of Fracture Models	Isogeometric Analysis of Failure in Solids and Structures	Phase-Field and Nonlocal Damage Approaches to Fracture
Chair	J.-F. Molinari	D. Dias da Costa	F. Suárez	C.V. Verhoosel and J.J.C. Remmers	C. Miehe
11:00	P. Gruber, M. Kružík, J. Zeman*: <i>A variational formulation of mixed-mode decohesion processes (keynote lecture)</i>	E. Benvenuti*, G. Ventura, N. Ponara, A. Tralli: <i>Three-dimensional modelling of embedded coated spherical inclusions through a regularized XFEM approach (keynote lecture)</i>	J. Mazars*, S. Grange, F. Hamon, M. De Biaso: <i>Seismic analysis of RC structures using damage model and simplified modelling (keynote lecture)</i>	C.V. Verhoosel*, G.J. van Zwieten, R. de Borst: <i>Micromechanical failure modeling of trabecular bone using isogeometric analysis (keynote lecture)</i>	M. Zaccariotto*, F. Luongo, G. Galvanetto: <i>Crack propagation modelling in presence of voids and inclusions using a peridynamic approach (keynote lecture)</i>
11:10					
11:20					
11:30	T. Wu*, I. Temizer, P. Wriggers, M. Paggi: <i>A multiscale hydro-thermo-mechanical cohesive zone model in concrete</i>	B. Vandoren*, K. De Proft, A. Simone, L.J. Sluys: <i>A constrained Large Time INcrement method for modelling quasi-brittle failure</i>	J.A. Alonso*, E. Reyes, J.C. Gálvez: <i>Finite element simulation of sandwich panels of laminated plaster and rockwool under mixed mode fracture</i>	R. Dimitri*, L. De Lorenzis, P. Wriggers, G. Zavarise: <i>T-spline-based isogeometric cohesive zone modeling of interface debonding</i>	D. Grégoire*, L.B. Rojas-Solano, G. Pijaudier-Cabot: <i>Upscaling non-local interactions during damage and failure in quasi-brittle materials</i>
11:40					
11:50	V. Palmieri*, L. De Lorenzis, G. Zavarise: <i>A multiscale cohesive zone model for fibre-reinforced polymer sheets bonded to concrete</i>	P. Neto*, J. Alfaiate, J. Vinagre: <i>Three-dimensional modelling of the concrete-CFRP bond behaviour</i>	J.P.-H. Belnoue*, S.R. Hallett: <i>Fracture modelling of adhesive bonds subjected to multiaxial loading</i>	S. Hosseini*, J.J.C. Remmers, C.V. Verhoosel, R. de Borst: <i>An isogeometric solid-like shell element for modelling delamination</i>	N. Moës*, C. Stolz, N. Chevaugeon, A. Salzman: <i>The Thick Level Set Model: A non-local damage model allowing automatic crack placement inside localization zones</i>
12:00					
12:10	H.D. Wang*, V. Maurel, F. Salgado-Gonçalves, A. Köster, J. Besson: <i>Crack growth analysis under low-cycle fatigue at high temperature using a cohesive zone model</i>	S. Loehnert*: <i>A stabilization technique for the extended finite element simulation of arbitrary crack geometries in 3D</i>	J.C. Gálvez*, S. Guzman, J.M. Sancho: <i>Cover cracking of the reinforced concrete due to rebar corrosion induced by chloride penetration</i>	J. Vignollet*, S. May, R. de Borst, C.V. Verhoosel: <i>A phase-field model for cohesive fracture using isogeometric analysis</i>	
12:20					
12:30	S. Roth*, M. Kuna: <i>Modelling of fatigue crack growth with a cohesive zone model approach including a local endurance limit</i>	H.S.D. de Argôlo*, S.P.B. Proença: <i>Generalized finite element method and the splitting method as a framework for multiple site damage</i>			
12:40					

Room	C215	C217	C219	C221	C223
Session	DFQ-I	DyF-I	IIV-II	PFC-I	TCC-I
Mini-symp.	Damage and Fracture of Quasibrittle Materials	Dynamic Fracture	Industrial Applications and Validation of Fracture Models	Present and Future of Crack Tracking Algorithms	Two-Scale Coupled Computational Approaches Towards Failure and Fracture
Chair	P. Grassl	J. Ožbolt	J. Mazars	A. Pandolfi	X. Oliver
14:00	V. Lefort, L.B. Rojas Solano, D. Grégoire, P. Grassl, G. Pijaudier-Cabot*: <i>Correlations involved in the failure of quasi-brittle materials: Analysis with a meso-scale model (keynote lecture)</i>	A. Combescure*, V. Faucher, F. Caleyron, S. Potapov: <i>Modelling dynamic fracture of shells filled with fluid (keynote lecture)</i>	F. Suárez*, J.C. Gálvez, J.M. Atienza, D.A. Cendón, M. Elices: <i>Experimental validation of a fracture model for pearlitic steel bars based on the cohesive zone model (keynote lecture)</i>	M. Negri*: <i>Consistency of phase-field with sharp crack evolutions in brittle fracture (keynote lecture)</i>	O. Bettinotti, O. Allix*, B. Malherbe, V. Oancea: <i>Towards a weakly intrusive space-time multi-scale strategy for the prediction of delamination under impact (keynote lecture)</i>
14:10					
14:20					
14:30	F. Kun*, I. Varga, G. Pál, S. Lennartz-Sassinek, I.G. Main: <i>Crackling noise in a discrete element model of heterogeneous materials</i>	N. Jacques*, S. Mercier, A. Molinari: <i>A micromechanical damage model for ductile solids incorporating micro-inertial effects and application to dynamic crack extension</i>	U. Häussler-Combe, J. Hartig, J. Weselek*: <i>Stochastic crack formation in reinforced concrete tension bars</i>	B. Bourdin*, C. Chukwudozie, K. Yoshioka: <i>A variational approach to the numerical simulation of hydraulic fracturing</i>	A. Javili*, A. McBride, J. Mergheim, P. Steinmann, S. Bargmann: <i>Micro-to-macro transitions for heterogeneous material layers accounting for in-plane stretch</i>
14:40					
14:50	Zs. Danku*, F. Kun: <i>Damage enhanced creep in the fiber bundle model</i>	A. Serjouei*, R. Chi, I. Sridhar: <i>Pre-stress effect on the ballistic behaviour of ceramic armor: Numerical approach</i>	C. Soyarslan, K. Isik*, A.E. Tekkaya: <i>Modeling anisotropic ductile damage in sheet metal forming</i>	A. Salvadori*, F. Fantoni: <i>Crack kinking in brittle materials</i>	C. Oskay*, R. Crouch, M. Bogdanor, S. Clay: <i>Multiple spatio-temporal scale modeling of failure in composites subjected to cyclic loading</i>
15:00					
15:10	G. Couégnat*, M. Genet, A.P. Tomsia, R.O. Ritchie: <i>A computational approach to the statistical and size-dependent failure of cellular ceramics</i>	G. Pál*, F. Kun: <i>Dimensional crossover in impact fragmentation</i>	W. Dang*, P. Jousset, M. Rachik: <i>A detailed modeling for fracture simulation of spot welds in advanced high strength steel DP600</i>	K. Özenç*, M. Kaliske: <i>Numerical simulation of fracture in viscoelastic materials based on material forces</i>	B.G. Vossen*, P.J.G. Schreurs, O. van der Sluis, M.G.D. Geers: <i>Multi-scale modelling of fibrillation during copper-rubber interface delamination</i>
15:20					
15:30	M. Kuna*, T. Liedke, B. Nassauer: <i>Simulation of micromechanical fragmentation and removal processes during wire sawing</i>		M. Michaeli, F. Assous*: <i>Nitsche type method for handling the interface conditions in equations of elasticity</i>	R. Toader*: <i>Variational models for crack growth</i>	V. Monchiet, D. Kondo*: <i>Overall strength of ductile materials: Spheroidal nanovoids size effects</i>
15:40					

Room	C215	C217	C219	C221	C223
Session	DFQ-II	DyF-II	IAV-III	PFC-II	TCC-II
Mini-symp.	Damage and Fracture of Quasibrittle Materials	Dynamic Fracture	Industrial Applications and Validation of Fracture Models	Present and Future of Crack Tracking Algorithms	Two-Scale Coupled Computational Approaches Towards Failure and Fracture
Chair	G. Pijaudier-Cabot	A. Combescure	J.C. Gálvez	A. Salvadori	O. Allix
16:20	D. Ciancio*, I. Carol, G. Castellazzi: <i>Fictitious elastic stiffness parameters of zero-thickness interface elements to recover accurate nodal stresses (keynote lecture)</i>	J. Ožbolt*, B. Irhan, A. Sharma: <i>Modelling concrete under high loading rates and impact (keynote lecture)</i>	B. Zheng, H.D. Yu*, S.H. Li: <i>Correlation of the evolution of cracks of 7075-T651 and surface integrity caused by various machining manufacture processes</i>	M. Cuomo*, L. Greco: <i>A variational algorithm for crack evolution in plane problems (keynote lecture)</i>	L.A.A. Beex, R.H.J. Peerlings*, M.G.D. Geers: <i>Multiscale computational modelling of inelasticity and fracture in fibre networks</i>
16:30					
16:40			Z. Zhang*, T. Sornsuwan, W. Li, M.V. Swain, Q. Li: <i>Influence of marginal thickness and convergence angle of taper abutment on resin-bonded-glass models</i>		L. Wu, D. Tjahjanto, G. Becker, A. Makradi, A. Jérusalem, L. Noels*: <i>A micro-model of the intra-laminar fracture in fiber-reinforced composites based on a discontinuous Galerkin/extrinsic cohesive law method</i>
16:50	S. Marfia*, E. Sacco, J. Toti: <i>An interface damage model depending on the body degradation</i>	U. Häussler-Combe*, T. Kuehn: <i>A novel strain rate model for concrete and its influence upon crack energy</i>		A.T. Slobbe, M.A.N. Hendriks*, J.G. Rots: <i>C1-continuous crack propagation across quadratic elements</i>	
17:00			O. Soto*, J. Baum, R. Löhner: <i>Improvement in the fracture numerical simulation for coupled CFD/CSD blast and impact problems by using inter-element stabilization</i>		C. Prange*, S. Loehnert, P. Wriggers: <i>Discretization and model adaptivity for the multiscale XFEM simulation of arbitrary crack geometries using unstructured meshes</i>
17:10	E. Bartůňková*, P. Kabele: <i>Constitutive model for timber fracture under tension and shear</i>	F.C. Caner*, Z.P. Bažant: <i>Comminution in concrete at extremely high strain rates</i>		F. Rabold*, M. Kuna: <i>PROCRACK - A software tool for finite element simulation of three-dimensional fatigue crack growth</i>	
17:20					A. Akbari Rahimabadi*, P. Kerfriden, S. Bordas: <i>An adaptive multiscale strategy to simulate fracture of heterogeneous structures</i>
17:30	P. Hlaváček*, V. Šmilauer: <i>Fracture properties of cement composites reinforced by carbon nanotubes</i>	Z.P. Bažant*, F.C. Caner: <i>Dynamic comminution of quasibrittle solids at high-rate shear under impact and analogy with turbulence</i>		L. Saucedo*, T.J. Marrow: <i>3D cellular automata finite element method with explicit microstructure: Modeling quasi-brittle fracture using mesh-free damage propagation</i>	
17:40					
17:50	K. Musiket*, M. Rosendahl, Y. Xi: <i>Fracture properties of recycled aggregate concrete</i>			L. Kaczmarczyk*, C. Pearce: <i>A modelling framework for three-dimensional brittle fracture</i>	
18:00					

CFRAC 2013 – Parallel Sessions, Friday, 7 June 2013

DFQ **Damage and Fracture of Quasibrittle Materials**
organized by I. Carol and G. Pijaudier-Cabot

DyF **Dynamic Fracture**
organized by A. Combescure and J. Ožbolt

AEM **Advances in the Experiment-Modeling Dialog**
organized by J. Réthoré and S. Roux

PFC **Present and Future of Crack Tracking Algorithms**
organized by M. Ortiz and A. Pandolfi

TCC **Two-Scale Coupled Computational Approaches Towards Failure and Fracture**
organized by M. G. D. Geers, A. E. Huespe, S. Loehnert, X. Oliver and P. Wriggers

Room	C215	C217	C219	C221	C223
Session	DFQ-III	DyF-III	AEM-I	PFC-III	TCC-III
Mini-symp.	Damage and Fracture of Quasibrittle Materials	Dynamic Fracture	Advances in the Experiment-Modeling Dialog	Present and Future of Crack Tracking Algorithms	Two-Scale Coupled Computational Approaches Towards Failure and Fracture
Chair	I. Carol	J. Ožbolt	S. Roux	B. Bourdin	S. Loehnert
11:00	G. Cusatis*, X. Zhou: <i>High-order microplane theory for elasticity and softening of quasi-brittle materials (keynote lecture)</i>	R. Bargellini*, G. Lazzaroni, J.J. Marigo: <i>An analysis of the unstable propagation in a heterogeneous peeling test (keynote lecture)</i>	C. Chateau*, L. Gélébart, M. Bornert, J. Crépin: <i>Modeling of damage in unidirectional SiC/SiC composites and multi-scale experimental validation (keynote lecture)</i>	V. Lazarus*: <i>Crack front tracking using perturbation approaches (keynote lecture)</i>	J. Oliver*, A.E. Huespe, J.A. Hernández, M. Caicedo: <i>Two-scale modeling of material failure based on the continuum strong discontinuity approach</i>
11:10					
11:20					E. Bosco*, V.G. Kouznetsova, E.W.C. Coenen, M.G.D. Geers: <i>Continuous-discontinuous computational homogenization framework for modelling micro-scale damage towards macroscopic failure</i>
11:30	J.G. Rots*, M.A.N. Hendriks, A.T. Slobbe, A.V. van de Graaf: <i>Circumventing bifurcations</i>	L. Pereira*, J. Weerheijm, L.J. Sluys: <i>Dynamic response of concrete – LS-Dyna concrete material models review</i>	E. Charkaluk*, R. Seghir, J.F. Witz, P. Dufrenoy: <i>Thermomechanical couplings in metallic polycrystals: Full-field measurements and thermoplastic simulations</i>	F. Fantoni*, A. Salvadori, P.A. Wawrzynek, A.R. Ingraffea: <i>Minimum theorems in 3D incremental LEM: Theory and numerical tests</i>	G.A. Drosopoulos*, P. Wriggers, G.E. Stavroulakis: <i>Contact analysis in multi-scale computational homogenization</i>
11:40					
11:50	F. Luongo*, M. Zaccariotto, U. Galvanetto: <i>Simulation of crack propagation through the static application of peridynamics</i>	M. San Martín, V. Pettarín, A.P. Cislino*: <i>Finite element modeling of the drop weight impact test of PMMA specimens</i>	R. Estevez*, J. Réthoré: <i>Identification of a cohesive zone model at the micron scale</i>	R. Kolman*, S.S. Cho, K.C. Park: <i>Near non-spurious oscillations time scheme in finite element analysis of non-linear wave propagation and dynamic fracture mechanics</i>	S. Potapov*, A. Masurel: <i>Determining a representative sample for DEM modeling of concrete</i>
12:00					
12:10	J. Bobiński*, J. Tejchman: <i>Application of a coupled continuous-discontinuous approach to concrete fracture</i>	M.O. Benamer*, Y.T. Feng: <i>Fracture in reinforced concrete bridge columns under seismic loading</i>	D. Geoffroy, E. Héripéré, J. Crépin, A. Roos*: <i>Fracture of a gamma-TiAl polycrystal: Model versus experiment</i>	A.A. León Baldelli*, B. Bourdin, J.-J. Marigo, C. Maurini: <i>Complex crack patterns: Transverse fractures and delamination in thin film systems</i>	S. Toro, P.J. Sánchez, P.J. Blanco, A.E. Huespe*, R.A. Feijóo: <i>Two-scale model for failure analysis of heterogeneous materials: Numerical validation</i>
12:20					
12:30	T. Gerasimov*, E. Stein: <i>Simple, cheap and efficient explicit error estimator for adaptive fracture and damage analysis of quasibrittle materials</i>		J. van Beeck*, J. Neggens, P.J.G. Schreurs, J.P.M. Hoefnagels, M.G.D. Geers: <i>Quantification of three-dimensional surface deformation using global digital image correlation</i>	N. Blal*, L. Daridon, Y. Monerie, S. Pagano: <i>Overall elastoplastic behaviour of a cohesive medium</i>	
12:40					

Room	C215	C217	C219	C221	C223
Session	DFQ-IV	DyF-IV	AEM-II	-	-
Mini-symp.	Damage and Fracture of Quasibrittle Materials	Dynamic Fracture	Advances in the Experiment-Modeling Dialog		
Chair	G. Cusatis	U. Häussler-Combe	J. Réthoré		
14:00	P. Grassl*, D. Xenos: <i>On the calibration of nonlocal models for tensile fracture in concrete (keynote lecture)</i>	L. Pillon*: <i>Experimental observation of dynamic ductile damage development under various triaxiality conditions</i>	J. Leflohic, V. Parpoil, M. Poncelet*, H. Leclerc: <i>A digital image correlation controlled multiaxial machine to perform mixed mode crack propagation tests (keynote lecture)</i>		
14:10					
14:20		W. Sumelka*: <i>Fractional viscoplasticity accounting for isotropic damage</i>			
14:30	A. Sellier*, A. Millard: <i>A new method to assess the most likely tensile strength field in quasi brittle materials complying with the probabilistic scale effect</i>		J.B. Esnault*, V. Doquet, P. Massin: <i>A three-dimensional analysis of fatigue crack paths in thin sheets</i>		
14:40		S.M. Mousavi*, J. Paavola: <i>Elastodynamic antiplane analysis of cracked graded piezoelectric layer via DDT</i>			
14:50	V. Slowik*, N. Bretschneider, B. Villmann: <i>On the determination of softening curves for cementitious materials by inverse analysis of fracture tests</i>		A. Tixier*, C. Rospars, F. Dufour, A. Khadour, M. Quiertant, B. Masson: <i>Numerical modeling to analyse optical fiber measurements along a steel-concrete interface</i>		
15:00					
15:10	J. Ožbolt, A. Sharma*: <i>Dynamic fracture of quasi brittle materials: Failure mode and crack branching</i>		R. Kumpoopong, S. Yindeesuk*, D.A. Kuchma, P. Silarom, B. Ongsuksun, A. Issariyanukula, P. Chupanit: <i>Crack characteristics in complex D-regions designed using strut-and-tie models in reinforced concrete structures</i>		
15:20					
15:30	C. Oliver-Leblond*, F. Ragueneau, A. Delaplace: <i>3D global/local analysis of cracking of reinforced concrete</i>				
15:40					