

**The 6th International Conference on
CRACK PATHS (CP 2018)**

Verona (Italy), 19 – 21 September, 2018

WEDNESDAY, 19th September, 2018

08.00-09.00 Registration

09.15-09.30 Opening Ceremony - Room Aula Magna, 2nd floor

09.30-10.00 Plenary Lecture P1 - Room Aula Magna, 2nd floor

Chairperson: Youshi HONG, Beijing (China)

Anisotropy in fracture and fatigue resistance and its effect on crack path
Thomas LEITNER, Anton HOHENWARTER, Reinhard PIPPAN (page 17)

10.00-10.30 Refreshment (coffee, drinks, etc.)

10.30-12.30 Parallel Sessions A1, B1 and C1 (see next pages)

12.30-14.10 Lunch

14.10-15.30 Parallel Sessions A2, B2 and C2 (see next pages)

15.30-16.00 Refreshment (coffee, drinks, etc.)

16.00-17.20 Parallel Sessions A3, B3 and C3 (see next pages)

**18.00-20.00 Welcome Party at University of Verona - Faculty of Economics
Polo Santa Marta, Via Santa Marta 6, Verona, Italy**

PARALLEL SESSION A1 - Room A, ground floor

19th September, 2018, time 10.30-12.30

Chairperson: Jaroslav POKLUDA, Brno (Czech Republic)

- 10.30 Crack paths in additive manufactured Ti-6Al-4V specimens subjected to multiaxial cyclic loads page 130
Reza MOLAEI, Ali FATEMI
- 10.50 Multiaxial fatigue life prediction in notched samples based on a total strain energy density approach 31
Ricardo BRANCO, José Domingos COSTA, Luis BORREGO, Filippo BERTO
- 11.10 Experimental and numerical investigation of fatigue crack growth in a rail steel under non-proportional mixed-mode I + II loading 36
Thomas BONNIOT, Véronique DOQUET, Si Hai MAI
- 11.30 Biaxial fatigue tests and crack paths for 7075-T6 aluminum alloy 41
Victor CHAVES, Guido BERETTA, Jose Antonio BALBIN, Alfredo NAVARRO
- 11.50 Crack initiation life of titanium notched bars under uniaxial and multiaxial fatigue: calibration analysis of the potential drop method and experimental validation 55
Alberto CAMPAGNOLO, Giovanni BERTON, Filippo BERTO, Giovanni MENEGHETTI
- 12.10 Fatigue crack growth in welded S355 specimens subjected to combined loadings 93
Janusz LEWANDOWSKI, Dariusz ROZUMEK, Zbigniew MARCINIAK, Grzegorz LESIUK, Roberto BRIGHENTI

PARALLEL SESSION B1 - Room B, ground floor

19th September, 2018, time 10.30-12.30

Chairperson: Andrey SHANYAVSKIY, Moscow (Russia)

- 10.30 Influence of microstructures on fatigue property of high strength steels with different strengths page 56
Kanji OKUDA, Yuji ICHIKAWA, Kazuhiro OGAWA, Tsuyoshi SHIOZAKI, Naoki YAMAGUCHI
- 10.50 Fatigue crack paths in a low-carbon steel microstructure. Presentation and modelling 112
Donka ANGELOVA
- 11.10 Influence of surface texture sequence on fatigue properties of coated tool work steel 70
Marko SEDLAČEK, Borut ŽUŽEK
- 11.30 Microscopic analysis of non-propagating fatigue crack tips in interstitial-free steel 87
Yukihiko KIMURA, Yoshimasa TAKAHASHI, Taizo MAKINO, Takanori KATO, Shigeo ARAI
- 11.50 Phase-field solution scheme for fracture in heterogeneous microstructure 120
Karlo SELEŠ, Tomislav LEŠIČAR, Zdenko TONKOVIĆ, Jurica SORIC
- 12.10 Ferritic Ductile Cast iron: fatigue crack paths and damaging micromechanisms 65
Francesco IACOVIELLO, Vittorio DI COCCO

PARALLEL SESSION C1 - Room C, 1st floor

19th September, 2018, time 10.30-12.30

Chairperson: Matteo BENEDETTI, Trento (Italy)

- 10.30 Fracture process and strength of a post-installed adhesive anchor filled with UHPFRC
Ayumi SATOH, Koji TAKEDA, Kiyoshi MURAKAMI page 47
- 10.50 Fatigue strength of precipitation hardening Cu-6Ni-1.5Si alloy produced through
solution-heat-treatment with air cooling
Masahiro GOTO, Takaiei YAMAMOTO, Takashi IWAMURA, Junichi KITAMURA, 57
Seung-zeon HAN, Jee-hyuk AHN, Sangshik KIM
- 11.10 Fatigue crack path of laser melting deposited Ti-5Al-5Mo-5V-1Cr-1Fe titanium alloy
WANG Kai, BAO Rui, ZHANG Ting, JIANG Bao, YANG Zhongwei, LIU Dong 67
- 11.30 Influence of secondary dendrite arm spacing (SDAS) on the fatigue properties of
different conventional automotive aluminum cast alloys
Sascha GERBE, Ulrich KRUPP, Wilhelm MICHELS 102
- 11.50 3D crack propagation analysis of longitudinal stiffener to crossbeam welded
connection in OSDs
Weijian WU, Haohui XIN, Henk KOLSTEIN, Milan VELJKOVIC 60

PARALLEL SESSION A2 - Room A, ground floor

19th September, 2018, time 14.10-15.30 - Chairperson: Ali FATEMI, Memphis (USA)

- 14.10 Analysis of the effect of out-of-phase fatigue biaxial loads on crack path using XFEM
Diego INFANTE-GARCIA, Guian QIAN, Maria Henar MIGUELEZ, Eugenio GINER page 111
- 14.30 The experimental study of heat dissipation during fatigue crack propagation under
biaxial loading
Aleksei VSHIVKOV, Anastasia IZIUMOVA, Aleksandr ZAKHAROV, 124
Valery SHLYANNIKOV, Oleg PLEKHOV
- 14.50 Fatigue crack growth under in-phase loading as well as 180° phase-shifted loading
of austenitic stainless steel
Carl H. WOLF, Sebastian HENKEL, Yangxi QIU, Stephanie ACKERMANN, 73
Andreas BURGOLD, Meinhard KUNA, Horst BIERMANN
- 15.10 Fatigue crack growth in solid round bars under overlapping in-phase and out-of-phase
bending and torsional loading (only Extended Abstract)
Paul KOESTER, Manuela SANDER 138

PARALLEL SESSION B2 - Room B, ground floor

19th September, 2018, time 14.10-15.30 - Chairperson: Carlos NAVARRO, Seville (Spain)

- 14.10 Crack path and notch fatigue strength of Ti-6Al-4V ELI additively manufactured
via selective laser melting: Defect sensitivity
Matteo BENEDETTI, Ciro SANTUS page 40
- 14.30 Prediction of initiation of cracks and of crack paths at notches applying path-independent
integrals and material forces
Paul JUDT, Andreas RICOEUR 42
- 14.50 Calculation of 3D Residual Notch Stress Intensity Factors by means of the Peak
Stress Method: a preliminary investigation
Paolo FERRO, Filippo BERTO, Giovanni MENEGHETTI 49
- 15.10 Multi-parameter description of bi-material notch - A crack initiation from a free-edge
singularity
Jan KLUSÁK, Ondřej KREPL 88

PARALLEL SESSION C2 - Room C, 1st floor

19th September, 2018, time 14.10-15.30 - Chairperson: Filippo BERTO, Trondheim (Norway)

- 14.10 Mechanical characterization and crack growth path analysis of a Hybrid Metal Extrusion
& Bonding (HYB) joints of AA6082-T6 aluminium alloy and S355 structural steel
Filippo ABBATINALI, Lise SANDNES, Øystein GRONG, Jan TORGERSEN, 105
Filippo BERTO, Paolo FERRO
- 14.30 Use of the Hybrid Metal Extrusion & Bonding (HYB) process for butt welding of
Al-Mg-Si alloys: mechanical characterization and cracking behaviour
Lise SANDNES, Filippo BERTO, Øystein GRONG, Jan TORGERSEN, 39
Torgeir WELO, Ulf Roar AAKENES
- 14.50 Crack path analysis in bent galvanized ductile cast irons
Vittorio DI COCCO, Francesco IACOVIELLO, Stefano NATALI 64
- 15.10 Three-dimensional simulation of dynamic ductile crack propagation in a steel pipeline
using a coupled fluid-structure model
Reza HOJJATI TALEMI, Sergey MARTYNOV, Solomon BROWN, 109
Haroun MAHGEREFTEH

PARALLEL SESSION A3 - Room A, ground floor

19th September, 2018, time 16.00-17.20 - Chairperson: Eugenio GINER, Valencia (Spain)

- 16.00 Crack propagation of cast aluminium alloy in Low-Cycle Fatigue
Pablo WILSON, Nicolas SAINTIER, Thierry PALIN-LUC, Sébastien BERGAMO, Bruno SUDRET page 104
- 16.20 Fracture of elastic-brittle and elastic-plastic material under cyclic bending
Andrzej KUREK, Justyna KOZIARSKA, Marta KUREK, Anna KULESA, Tadeusz ŁAGODA 35
- 16.40 Low cycle fatigue and thermo-mechanical fatigue interaction in fatigue crack propagation behavior of a low-carbon nitrogen-controlled 316 stainless steel
Yasuhiro YAMAZAKI 84
- 17.00 Strength of additively manufactured Ti-6Al-4V under non-proportional multiaxial low cycle fatigue 78
Stefano BRESSAN, Fumio OGAWA, Takamoto ITOH, Filippo BERTO

PARALLEL SESSION B3 - Room B, ground floor

19th September, 2018, time 16.00-17.20 - Chairperson: Valery SHLYANNIKOV, Kazan (Russia)

- 16.00 Combined LCF-HCF multi-axial crack propagation in cruciform specimens
Guido DHONDT, Christian KONTERMANN page 30
- 16.20 Cruciform specimens as a tool to investigate fatigue crack growth behavior of metals
Sebastian HENKEL, Carl H. WOLF, Horst BIERMANN, Andreas BURGOLD, Meinhard KUNA 68
- 16.40 Multi-axial fatigue crack propagation in cruciform specimens
Venanzio GIANNELLA, Roberto CITARELLA 129
- 17.00 Micro-cracks beneath cleavage fracture surface in carbon steel ESSO specimens
Yasuhito TAKASHIMA, Tomoya KAWABATA, Ryosuke DEGUCHI, Fumiyoshi MINAMI 91

PARALLEL SESSION C3 - Room C, 1st floor

19th September, 2018, time 16.00-17.20 - Chairperson: Aleksandar SEDMAK, Belgrade (Serbia)

- 16.00 Crack paths in differential and integral light aircraft wing spar page 122
Aleksandar GRBOVIĆ, Gordana KASTRATOVIĆ, Aleksandar SEDMAK
- 16.20 Crack path for in-service fatigued titanium disk of the second stage APC for aircraft engine D18-T 33
Andrey A. SHANYAVSKIY, Alexandr L. TOUSHENTSOV
- 16.40 Crack propagation from 3D casting defect in a railway component
Teresa MORGADO, Ricardo DIAS, Miguel SOUSA, Manuel PEREIRA, Rui MARTINS, Pamies TEIXEIRA 50
- 17.00 Crack path on the railway tank of Viareggio disaster 99
Antonio DE IORIO

THURSDAY, 20th September, 2018

09.30-10.00 Plenary Lecture P2 - Room A, ground floor

Chairperson: Luca SUSMEL, Sheffield (UK)

Competitive cracking in nano-multilayered structure

Takayuki KITAMURA, Yabin YAN, Takashi SUMIGAWA,
Licheng GUO, Kai HUANG (page 18)

10.00-10.30 Refreshment (coffee, drinks, etc.)

10.30-12.30 Parallel Sessions A4, B4 and C4 (see next pages)

12.30-14.10 Lunch

14.10-15.30 Parallel Sessions A5, B5 and C5 (see next pages)

15.30-16.00 Refreshment (coffee, drinks, etc.)

16.00-17.00 Parallel Sessions A6, B6 and C6 (see next pages)

Palazzo Giardino Giusti (Via Giardino Giusti, 2, 37121 Verona) :

19.00-19.45 Appetizer and free visit to the garden of the Giusti Palace

**20.00-20.45 Concert of *Note d'Autore Guitar Orchestra*
conducted by Fulvio Redeghieri**

20.45-23.00 Conference Dinner

PARALLEL SESSION A4 - Room A, ground floor

20th September, 2018, time 10.30-12.30

Chairperson: Francesco IACOVIELLO, Cassino (Italy)

- | | | |
|-------|---|---------|
| 10.30 | Mixed mode fatigue crack growth thresholds revisited
<u>Les Philip POOK</u> | page 32 |
| 10.50 | Effect of twining and detwining on fatigue crack initiation and propagation paths in magnesium alloy
<u>Yoshikazu NAKAI</u> , Shoichi KIKUCHI, Hideki OKAE,
Masahiko SAKA, Hayata YOSHIDA | 45 |
| 11.10 | Fatigue crack growth simulation of two non-coplanar embedded cracks using s-version finite element method
<u>Akiyuki TAKAHASHI</u> , Ayaka SUZUKI, Masanori KIKUCHI | 51 |
| 11.30 | Fatigue crack paths
<u>Simon BARTER</u> , Madeleine BURCHILL, Paul WHITE | 119 |
| 11.50 | Evaluation of fatigue properties and near-threshold fatigue crack propagation in austenitic stainless steel with a bimodal harmonic structure
<u>Shoichi KIKUCHI</u> , Yuta NAKATSUKA, Yoshikazu NAKAI,
Masashi NAKATANI, Mie Ota KAWABATA, Kei AMEYAMA | 92 |
| 12.10 | Multi-point fracture mechanics for precision airframe sustainment
<u>Michael R. HILL</u> , Thomas J. SPRADLIN (only Extended Abstract) | 135 |

PARALLEL SESSION B4 - Room B, ground floor

20th September, 2018, time 10.30-12.30

Chairperson: Véronique DOQUET, Palaiseau (France)

- | | | |
|-------|---|---------|
| 10.30 | Fatigue crack path around interface of additive manufacturing AISI 18Ni300 steel implants
<u>Luis F. BORREGO</u> , Luis M.S. SANTOS, José A.M. FERREIRA,
José D. COSTA, Carlos CAPELA | page 75 |
| 10.50 | A compression-shear fracture growing on an arch-gravity dam
<u>Silvio VALENTE</u> , Chiara CAPRIULO | 97 |
| 11.10 | A comprehensive interpretation of the J-integral for interacting matrix and interface cracks
<u>Johannes SCHEEL</u> , Andreas RICOEUR | 43 |
| 11.30 | Microcrack interaction with circular inclusion and interfacial zone
Tomas PROFANT, <u>Miroslav HRSTKA</u> , Jan KLUSÁK | 131 |
| 11.50 | Control factor of the roughness of the cleavage fracture surface in polycrystalline steel
Tomoya KAWABATA, Fumiaki TONSHO, <u>Yuki NISHIZONO</u> ,
Yasuhito TAKASHIMA | 82 |
| 12.10 | Size effect on the fracture resistance of rough and frictional cracks
<u>Andrea SPAGNOLI</u> , Andrea CARPINTERI, Michele TERZANO | 29 |

PARALLEL SESSION C4 - Room C, 1st floor

20th September, 2018, time 10.30-12.30

Chairperson: Liviu MARSAVINA, Timisoara (Romania)

- 10.30 Crack paths in plain and notched specimens of additively manufactured PLA under static loading
Adnan A. AHMED, Luca SUSMEL page 59
- 10.50 Uncommon crack paths in soft thin sheets
Roberto BRIGHENTI, Andrea CARPINTERI, Federico ARTONI 28
- 11.10 Tensile and fatigue behavior of PEEK assessed by means of the local strain energy density
Mirco PERON, Jan TORGERSEN, Filippo BERTO 38
- 11.30 On the cutting resistance of elastomeric materials under different cutting angles
Andrea SPAGNOLI, Roberto BRIGHENTI, Michele TERZANO, Federico ARTONI 54
- 11.50 Numerical and experimental analysis of failure propagation in auxetic cellular structures
Janez KRAMBERGER, Branko NEČEMER, Srečko GLODEŽ 72
- 12.10 Study of crack initiation and propagation under constant displacement loading using CT specimens, for two polymers: ABS and PMMA 62
Gonzalo M. DOMÍNGUEZ ALMARAZ, Erasmo CORREA GÓMEZ, Julio C. VERDUZCO JUÁREZ, Alberto GUTIÉRREZ MARTÍNEZ, Ramón HERNÁNDEZ SÁNCHEZ

PARALLEL SESSION A5 - Room A, ground floor

20th September, 2018, time 14.10-15.30 - Chairperson: Masahiro GOTO, Oita (Japan)

- 14.10 Effect of the loading frequency on the fatigue crack propagation for three steels used in automotive industry as thin steel sheets
Mohand OUARABI, Ruben PÉREZ MORA, Thierry PALIN-LUC, Olivier POLIT, Karl GILLNER, Sebastian MUENSTERMANN page 121
- 14.30 On the modeling of fatigue damage ahead of the crack tip
Samuel Elias FERREIRA, Jaime Tupiassú Pinho de CASTRO, Marco Antonio MEGGIOLARO 101
- 14.50 Investigations of fatigue damage of tempered martensitic steel during HCF and VHCF loading
Kevin KOSCHELLA, Alexander GIERTLER, Ulrich KRUPP 117
- 15.10 Experimental investigation of anomalies in the elastic properties of metals at very high cycle loading and kinetics of damage accumulation (only Extended Abstract)
Mikhail BANNIKOV, Vladimir OBORIN, Sergey UVAROV, Oleg NAIMARK 143

PARALLEL SESSION B5 - Room B, ground floor

20th September, 2018, time 14.10-15.30 - Chairperson: Giovanni MENEGHETTI, Padua (Italia)

- 14.10 Determination of dissipated energy in fatigue crack propagation experiments with Lock-In Thermography page 90
Jürgen BÄR, Ralf URBANEK
- 14.30 Investigation on critical energy dissipation under fatigue loading
Sonali BHOWMIK, Sandeep DUBEY, Sonalisa RAY 106
- 14.50 An experimental and theoretical study of energy dissipation at fatigue crack tip in AISE 304 stainless steel
Oleg PLEKHOV, Alexei VSHIVKOV, Anastasia IZIUMOVA, Balasubramaniam VENKATRAMAN 123
- 15.10 On the estimation of the elastoplastic work needed to initiate crack tearing
Luiz Fernando Nazaré MARQUES, Eduardo Enes COTA, Jaime Tupiassú Pinho de CASTRO, Luiz Fernando MARTHA, Marco Antonio MEGGIOLARO 125

PARALLEL SESSION C5 - Room C, 1st floor

20th September, 2018, time 14.10-15.30 -

Chairperson: G.M. DOMÍNGUEZ ALMARAZ, Morelia (Mexico)

- 14.10 Assessment of the geometry effects on fracture behavior of V-notched specimens page 44
Seyed Mohammad Javad RAZAVI, Majid Reza AYATOLLAHI, Filippo BERTO
- 14.30 A new crack path tracking methodology based on dense displacement field estimation 96
Sylvia FELD-PAYET, Guy LE BESNERAIS, Didier PACOU, Vincent BONNAND
- 14.50 A novel algorithm for crack path identification based on infrared images denoising methods 71
Luca ROMANIN, Alexei VINOGRADOV, Filippo BERTO, Paolo FERRO
- 15.10 Fatigue crack imaging of V-notch specimen using X-ray tomography 76
Jafar ALBINMOUSA, Ibrahim MANSIR, Jobin JOSE, Mehaboob BASHA, Syed Haris IFTIKHAR

PARALLEL SESSION A6 - Room A, ground floor

20th September, 2018, time 16.00-17.00

Chairperson: Jaime Tupiassú Pinho de CASTRO, Rio de Janeiro (Brazil)

- 16.00 Numerical and experimental analysis of the initial crack path in fretting fatigue with cylindrical contact page 52
Luis BOHÓRQUEZ, Jesús VÁZQUEZ, Carlos NAVARRO, Jaime DOMÍNGUEZ
- 16.20 Initial orientation of the fretting fatigue cracks in shrink-fit connection specimens 103
Ciro SANTUS
- 16.40 Estimation of crack paths at initiation stage under fretting high-cycle fatigue 26
Giovanni FORTESE, Andrea CARPINTERI, Sabrina VANTADORI, Gabriel Magalhães Juvenal ALMEIDA, Geovana Callasans Veras PESSOA, José Alexander ARAÚJO

PARALLEL SESSION B6 - Room B, ground floor

20th September, 2018, time 16.00-17.00

Chairperson: Andreas RICOEUR, Kassel (Germany)

- 16.00 Crack path in fuselage panel under mixed mode biaxial loading page 53
Valery SHLYANNIKOV, Alexander ZAKHAROV, Andrew TUMANOV
- 16.20 Crack path prediction under mixed-mode loading in 1D piezoelectric quasicrystals 136
Zhibin WANG, Andreas RICOEUR (only Extended Abstract)
- 16.40 Fracture path prediction in two biomaterials tested under mixed mode loading 85
Mohammad Reza Mohammad ALIHA, Filippo BERTO, Sina Samareh MOUSAVI, Atefeh MOUSAVI

PARALLEL SESSION C6 - Room C, 1st floor

20th September, 2018, time 16.00-17.00

Chairperson: Andrea SPAGNOLI, Parma (Italy)

- 16.00 Investigation of fracture initiation angle and propagation path for PUR foams under mixed mode I/III loading page 113
Mohammad Reza Mohammad ALIHA, Aram BAHMANI, Emanoil LINUL, Liviu MARSAVINA, Sina Samareh MOUSAVI, Atefeh MOUSAVI
- 16.20 Modelling of cracking of the ceramic foam specimen with a central notch under the tensile load 118
Oldřich ŠEVEČEK, Zdeněk MAJER, Petr MARCIÁN, Luca BERTOLLA, Zdeněk CHLUP, Michal KOTOUL
- 16.40 Experimental observation and numerical modelling of unstable behavior of a fast crack velocity 126
Ivan SMIRNOV, Nikita KAZARINOV, Yuri PETROV

FRIDAY 21st September, 2018

09.30-10.00 Plenary Lecture P3 - Room A, ground floor

Chairperson: Thierry PALIN-LUC, Talence (France)

Crack paths in single-crystal Ni-base superalloys under
isothermal and thermomechanical fatigue

Richard W. NEU (page 19)

10.00-10.30 Refreshment (coffee, drinks, etc.)

10.30-12.30 Parallel Sessions A7, B7 and C7 (see next pages)

12.30-14.10 Lunch

14.10-15.50 Parallel Sessions A8, B8 and C8 (see next pages)

16.00-16.15 Closing Ceremony - Room A, ground floor

PARALLEL SESSION A7 - Room A, ground floor

21st September, 2018, time 10.30-12.30

Chairperson: Donka ANGELOVA, Sofia (Bulgaria)

- 10.30 Characteristics of fatigue crack growth in gradient layer of hardened surface
for a structural steel (only Extended Abstract) page 141
Youshi HONG, Yuanpei HU, Shijia ZHANG, Chengqi SUN
- 10.50 Near-threshold propagation behavior of small cracks in annealed carbon steels
under torsional loading 116
Masahiro ENDO, Keiji YANASE
- 11.10 Prediction of fatigue life and limit of steels based on small crack growth
Hiroaki ITO, Kazuki SHIBANUMA, Koya UEDA, Masao KINEFUCHI, 80
Katsuyuki SUZUKI, Manabu ENOKI
- 11.30 The heat energy density averaged in the material structural volume to correlate
the fatigue crack growth rate in stainless steel specimens 107
Giovanni MENEGHETTI, Mauro RICOTTA
- 11.50 Application of the generalized Kitagawa diagram on cast steel
Manuel SCHUSCHA, Martin LEITNER, Michael STOSCHKA, 110
Giovanni MENEGHETTI
- 12.10 Variety of crack paths: duality of singularities of multiscale damage and crack advance
Oleg NAIMARK 114

PARALLEL SESSION B7 - Room B, ground floor

21st September, 2018, time 10.30-12.30

Chairperson: Tomoya KAWABATA, Tokyo (Japan)

- 10.30 Brittle crack propagation acceleration in a single crystal of 3% silicon-Fe alloy
Tomoya KAWABATA, Daiki NAKANISHI, Shuji AIHARA page 81
- 10.50 A local approach to cleavage fracture incorporating the measured statistics of
microcracks 132
Claudio RUGGIERI, Andrey P. JIVKOV
- 11.10 Experimental characterization at nanoscale of single crystal silicon fracture toughness
Pasquale GALLO, Takashi SUMIGAWA, Takayuki KITAMURA 46
- 11.30 Crack propagating in a brittle DCB specimen described by using the Williams' power
expansion (paper orally presented by Jiří KLON) 69
Lucie MALIKOVA, Seyed Mohammad Javad RAZAVI, Filippo BERTO
- 11.50 Inhibition of hydrogen environment assisted cracking by small amount of oxygen
contained in hydrogen gas 79
Ryosuke KOMODA, Masanobu KUBOTA, Aleksandar STAYKOV,
Patrick GINET, Françoise BARBIER, Jader FURTADO
- 12.10 Influence of T-stress effects on crack deflection shape (only Extended Abstract)
Alberto SAPORA, Pietro CORNETTI, Vladislav MANTIĆ 142

PARALLEL SESSION C7 - Room C, 1st floor

21st September, 2018, time 10.30-12.30

Chairperson: Akiyuki TAKAHASHI, Noda (Japan)

- 10.30 Cracking of fiber composites subjected to three- and four-point bending
Karolina ŁAGODA, Andrzej KUREK, Tomasz OSIECKI, Lothar KROLL,
Wojciech BLAZEJEWSKI, Tadeusz ŁAGODA page 77
- 10.50 A parametric study on Strain Energy Release Rate of sandwich composites
for Mode II crack propagation path 37
Ayse Cagla BALABAN, Kong Fah TEE
- 11.10 Investigation of crack paths in unidirectional flax fibre-reinforced epoxy composites
under static loading 89
Stefan KECK, Markus FULLAND
- 11.30 Numerical model of cracking pattern in laminated bamboo specimens under tensile
and shear loads 94
Martin ESTRADA, Dorian Luis LINERO, Caori Patricia TAKEUCHI
- 11.50 Cracks propagation and lifetime assessment of particulate ceramic composite with
residual stresses (only Extended Abstract) 144
Luboš NÁHLÍK, Kateřina ŠTEGNEROVÁ, Zdeněk MAJER, Ondrej SLÁVIK,
Pavel HUTAŘ
- 12.10 Stress fields at the central point of arc crack under uniaxial tension 115
Mohammed Mahmoud AISH

PARALLEL SESSION A8 - Room A, ground floor

21st September, 2018, time 14.10-15.50

Chairperson: Masahiro ENDO, Fukuoka (Japan)

- 14.10 Modeling 2D surface to 1D through-crack transitions using 2D point load weight function
Antonio Carlos de OLIVEIRA MIRANDA, Marcelo AVELAR ANTUNES, Marco Antonio MEGGIOLARO, Jaime Tupiassú Pinho de CASTRO page 100
- 14.30 The effect of welding residual stresses on the surface fatigue crack path in welded joint of the pipeline 58
Yury MATVIENKO, Aleksander CHERNYATIN, Igor RAZUMOVSKY
- 14.50 Analysis of semi-elliptical surface crack growth under cyclic loading 74
Slobodanka BOLJANOVIĆ
- 15.10 Propagation of a semi-elliptical crack in a pin-lug joint 24
Daniela SCORZA, Andrea CARPINTERI, Sabrina VANTADORI
- 15.30 Effect of different boundary conditions on the crack growth mechanism under cycling bending loads 128
Giovanni Pio PUCILLO, Luca ESPOSITO, Francesco PENTA, Davide LEONETTI

PARALLEL SESSION B8 - Room B, ground floor

21st September, 2018, time 14.10-15.50

Chairperson: Guido DHONDT, Munich (Germany)

- 14.10 The effect of creep damage model formulation on crack path prediction page 127
Valery SHLYANNIKOV, Andrew TUMANOV
- 14.30 Stress intensity factors at in-plane and out-of-plane tortuous crack fronts under remote mode II loading 66
Stanislav ŽÁK, Jana HORNÍKOVÁ, Pavel ŠANDERA, Tomáš VOJTEK, Jaroslav POKLUDA
- 14.50 Meshless peridynamics method for modeling corrosion crack propagation 98
Srujan ROKKAM, Nam PHAN, Max GUNZBURGER, Sachin SHANBHAG, Kishan GOEL
- 15.10 Investigation of the stress state of the elastic semi-strip with a transverse crack 61
Victor REUT, Nataly VAYSELD, Zinaida ZHURAVLOVA
- 15.30 Numerical simulation of three-dimensional crack growth based on configurational forces and vector formulations of the J-integral (only Extended Abstract) 137
Kevin SCHMITZ, Paul JUDT, Andreas RICOEUR

PARALLEL SESSION C8 - Room C, 1st floor

21st September, 2018, time 14.10-15.50

Chairperson: Silvio VALENTE, Turin (Italy)

- 14.10 Monitoring of steel-concrete bond using pull-out test with the acoustic emission technique page 108
Jacqueline SALIBA, Djillali MEZHOUD, Youcef BOUAFIA, Mohammed SAAD
- 14.30 Experimental characterization of fiber-reinforced cementitious mortar under tension 83
Patrizia BERNARDI, Daniele FERRETTI, Filippo LEURINI, Elena MICHELINI
- 14.50 A novel mesostructural approach to improve crack propagation modeling in asphalt concrete 95
Gaetano BOSURGI, Federico CARBONE, Orazio PELLEGRINO,
Giuseppe SOLLAZZO
- 15.10 Damage initiation and crack path simulation of pre-stressed concrete sleepers with the Thick Level Set model 139
Olivier PIERARD, Rebecca NAKHOUL (only Extended Abstract)
- 15.30 Modeling restrained shrinkage-induced cracking in concrete elliptical ring specimens using the Thick Level Set 140
Rebecca NAKHOUL, Olivier PIERARD (only Extended Abstract)

16.00-16.15 Closing Ceremony - Room A, ground floor