

## Characterisation of Crack/Notch Tip Fields

Centre for Advanced Academic Studies, Dubrovnik, Croatia, 11-13 April 2021

### Program Overview

Sunday 10 April 2022	Monday 11 April 2022	Tuesday 12 April 2022	Wednesday 13 April 2022
	08:00-08:45 Registration	08:00-09:00 Registration	08:00-09:00 Registration
	08:45-09:00 Workshop Opening		
	09:00-10:30 Crack tip field mechanisms (I)	09:00-10:30 Crack tip field mechanisms (III)	09:00-10:30 Miscellaneous (I)
	10:30-11:00 Coffee Break	10:30-11:00 Coffee Break	10:30-11:00 Coffee Break
	11:00-12:30 Crack tip field characterising parameters (I)	11:00-12:30 Crack tip field characterising parameters (II)	11:00-12:30 Miscellaneous (II)
	12:30-14:00 Lunch	12:30-14:00 Lunch	12:30-14:00 Lunch
	14:00-15:30 Crack tip field mechanisms (II)	14:00-15:30 Crack tip field mechanisms (IV)	14:00-14:30 Workshop Closing
	15:30-16:00 Coffee Break	15:30-16:00 Coffee Break	
17:00-18:00 Registration	16:00-17:00 Crack tip fields miscellaneous	16:00-17:00 Crack tip field characterising parameters (III)	
18:00-20:00 Welcome Reception	19:00-21:00 Dubrovnik City Center Tour	19:00-21:00 Workshop Dinner	

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### Detailed Program

Monday, 11 April 2022	
08:00 - 08:45	Registration
08:45 - 09:00	Workshop Opening Room: CONFERENCE HALL
09:00 - 10:30	Crack tip field mechanisms (I) Room: CONFERENCE HALL Chair: Željko Božić
09:00 - 09:20	<b>Siegfried Schmauder, Kiarash J. Dogahe</b> SIMULATION OF THE FATIGUE CRACK INITIATION IN SAE 52100 MARTENSITIC HARDENED BEARING STEEL DURING ROLLING CONTACT
09:20 - 09:40	<b>David Nowell</b> WHERE NEXT FOR FATIGUE CRACK CHARACTERISATION
09:40 - 10:00	<b>A. Spagnoli, M. Terzano, R. Brighenti, M. Montanari</b> FAILING SOFTLY: A DISCUSSION ON CRACK-TIP BLUNTING AND FLAW TOLERANCE IN SOFT ELASTIC SOLIDS
10:00 - 10:20	- -
10:30 - 11:00	Coffee Break
11:00 - 12:30	Crack tip field characterising parameters (I) Room: CONFERENCE HALL Chair: Malcolm Neil James
11:00 - 11:20	<b>Alonso Camacho-Reyes, Jose Manuel Vasco-Olmo, Malcolm Neil James, Francisco Alberto Diaz</b> A HYBRID METHOD FOR THE CHARACTERISATION OF THE CRACK TIP SINGULARITY PARAMETERS FROM THE ANALYSIS OF THE EXPERIMENTALLY MEASURED FIELDS
11:20 - 11:40	<b>Giovanni Meneghetti, Alberto Campagnolo, Alberto Visentin</b> RAPID EVALUATION OF NOTCH STRESS INTENSITY FACTORS USING THE PEAK STRESS METHOD WITH 3D TETRAHEDRAL FINITE ELEMENT MODELS: COMPARISON OF COMMERCIAL CODES
11:40 - 12:00	<b>Alberto Campagnolo, Silvio Zuin, Giovanni Meneghetti</b> RAPID ESTIMATION OF THE AVERAGED STRAIN ENERGY DENSITY FROM NODAL DISPLACEMENTS BY COARSE FE ANALYSES: CRACKS UNDER MIXED MODE LOADINGS
12:00 - 12:20	<b>David Taylor</b> NOTCH TIP FIELDS IN MATERIALS WITH MULTI-SCALE TOUGHENING MECHANISMS

12:30 - 14:00 Lunch

14:00 - 15:30 Crack tip field mechanisms (II)

Room: CONFERENCE HALL

Chair: Liviu Marşavina

14:00 - 14:20 Valery Shlyannikov, Dariya Fedotova, Ruslan Khamidullin  
CRACK TIP FIELDS, STRESS INTENSITY FACTORS AND DISLOCATION DENSITIES IN STRAIN GRADIENT PLASTICITY

14:20 - 14:40 Zach Narowlansky Davey, Martyn Pavier, Mahmoud Mostafavi  
THE EFFECT OF WELDING ON BRITTLE FRACTURE: A STATISTICAL INVESTIGATION

14:40 - 15:00 Alberto Sapora, Pietro Cornetti, George Efremidis, Andrea Spagnoli  
A FINITE FRACTURE MECHANICS APPROACH TO HYDRAULIC FRACTURING

15:20 - 15:40 Valery Shlyannikov, Alexander Sulamanidze, Dmitry Kosov  
FATIGUE, CREEP-FATIGUE INTERACTION AND THERMO-MECHANICAL CRACK GROWTH OF XH73M NICKEL ALLOY

15:30 - 16:00 Coffee Break

16:00 - 17:00 Crack tip fields miscellaneous

Room: CONFERENCE HALL

Chair: Fernando Antunes

16:00 - 16:20 -

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16:20 - 16:40 -

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16:40 - 17:00 -

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19:00 - 21:00 Dubrovnik City Center Tour

Tuesday, 12 April 2022

08:00 - 09:00 Registration

09:00 - 10:30 Crack tip field mechanisms (III)

Room: CONFERENCE HALL

Chair: Reinhard Pippan

09:00 - 09:20 Aris Tsakmakis, Michael Vormwald

PHASE FIELD MODELS FOR ELASTOPLASTICITY

09:20 - 09:40 A. Junet, X. Boulnat, A. Weck, J-Y Buffiere

INTERNAL FATIGUE CRACK PROPAGATION IN A TI ALLOY

09:40 - 10:00 Andrey Jivkov, Kiprian Berbatov

CONSERVATION LAWS IN DISCRETE TOPOLOGICAL SPACES

10:00 - 10:20 Abdalrhaman Koko, Thorsten H. Becker, Angus J. Wilkinson, and T. James Marrow

IN SITU HR-EBSD ANALYSIS OF QUASI-STATIC CRACK PROPAGATION IN SINGLE CRYSTAL SILICON

10:30 - 11:00 Coffee Break

11:00 - 12:30 Crack tip field characterising parameters (II)

Room: CONFERENCE HALL

Chair: Michael Vormwald

11:00 - 11:20 N. Alanazi, L. Susmel

NOTCH TIP FIELDS AND MATERIAL CRITICAL DISTANCE: WHAT CAN WE LEARN FROM CONCRETE?

11:20 - 11:40 Reinhard Pippan, Daniel Kiener, Philip Withers, Jürgen Maierhofer

LIMITATION OF STRAIN FIELD MEASUREMENTS AND THE CONSEQUENCES FOR THE INTERPRETATION OF FATIGUE AND

11:40 - 12:00 A. Messenger, A. Junet, T. Palin-Luc, N. Ranc, J-Y. Buffière, N. Saintier, Y. Nadot, Y. Gaillard

THREE DIMENSIONAL OBSERVATIONS AND ANALYSIS OF INTERNAL FATIGUE CRACK GROWTH IN A CAST ALUMINUM ALLOY

12:00 - 12:20 Fernando Antunes, Alonso Reyes, Diogo Neto, Jose Vasco-Olmo, Edmundo Sérgio, Francisco Díaz

CYLINDRICAL SPECIMEN WITH CENTRAL CRACK (CCC): A NOVEL SPECIMEN GEOMETRY FOR FCG STUDIES UNDER PURE PLANE STRAIN CONDITIONS

12:30 - 14:00 Lunch

**14:00 - 15:30 Crack tip field mechanisms (IV)**

Room: CONFERENCE HALL

Chair: Giovanni Meneghetti

14:00 - 14:20 **Youshi Hong, Leiming Du, Liang Zheng**

DISTINCT CHARACTERISTICS IN CRACK INITIATION REGION FOR ADDITIVELY MANUFACTURED TI-6AL-4V SUBJECTED TO HIGH-CYCLE AND VERY-HIGH-CYCLE FATIGUE

14:20 - 14:40 **Petr Miarka, Wouter De Corte, Alejandro Cruces, Pablo Lopez Crespo, Stanislav Seitzl**

FRACTURE PROCESS ZONE IN THE VICINITY OF CRACK TIP UNDER MIXED MODE IN HPC

14:40 - 15:00 **Diogo Neto, Edmundo Sérgio, Fernando Antunes**

SIMULATION OF FATIGUE CRACK GROWTH USING THE CUMULATIVE PLASTIC STRAIN AT THE CRACK TIP

15:20 - 15:40 **Željko Božić**

INTERACTION MODELLING FOR MULTIPLE PROPAGATING FATIGUE CRACKS

**15:30 - 16:00 Coffee Break**

**16:00 - 17:00 Crack tip field characterising parameters (III)**

Room: CONFERENCE HALL

Chair: Aleksandar Sedmak

16:00 - 16:20 **E.R. Sérgio, D.M. Neto, F.V. Antunes**

FATIGUE CRACK GROWTH PREDICTION CONSIDERING CYCLIC PLASTIC STRAIN AND MICRO-VOID MODELLING

16:20 - 16:40 **Abdo Koko, Shraddha Singh, Selim Barhli, Thomas Connolley, Nghia Vo, Tim Wigger, Dong Liu, Yuchen Fu, Julien Réthoré, Joel Lechambre, Jean-Yves Buffiere, James Marrow**

3-DIMENSIONAL ANALYSIS OF FATIGUE CRACK FIELDS AND CRACK GROWTH BY IN SITU SYNCHROTRON X-RAY TOMOGRAPHY

16:40 - 17:00 **Stanislav Žák, Pavel Šandera, Jana Horníková, Jaroslav Pokluda**

THE CRITICAL LENGTH OF SHEAR-MODE CRACKS EMANATING FROM CIRCUMFERENTIAL U-NOTCHES IN ROUND BARS

**19:00 - 21:00 Workshop Dinner**

Wednesday, 13 April 2022

08:00 - 09:00 Registration

09:00 - 10:30 Miscellaneous (I)

Room: CONFERENCE HALL

Chair: Siegfried Schmauder

09:00 - 09:20 Andrei Kotousov

3D STRESS STATES, SCALE EFFECTS AND BRITTLE FRACTURE CRITERION

09:20 - 09:40 Aleksandar Sedmak, Gorgi Adžiev, Simon Sedmak, Todor Adžiev, Zoran Radaković

MISMATCHING CONSTRAINT EFFECTS ON CRACK PROPAGATION THROUGH A HEAT AFFECTED ZONE

09:40 - 10:00 Aleksa Milovanović, Miloš Milošević, Isaak Trajković, Aleksandar Sedmak, Mohammad Javad Razavi, Filippo Berto

CRACK PATH IN FRACTURE TOUGHNESS TESTS OF PLA AND PLA-X

10:00 - 10:20 Elisaveta Donceva, Bojan Medjo, Marko Rakin, Aleksandar Sedmak, Nenad Milosevic

CONSTRAINT EFFECT OF TENSILE PANEL CRACK SIZE ON FRACTURE MECHANICS PARAMETERS

10:30 - 11:00 Coffee Break

11:00 - 12:30 Miscellaneous (II)

Room: CONFERENCE HALL

Chair: Jaroslav Pokluda

11:00 - 11:20 Mihai Marghitas, Liviu Marsavina

THE SIZE EFFECT IN ADDITIVELY MANUFACTURED COMPONENTS

11:20 - 11:40 Tomáš Vojtek, Radek Kubíček, Pavel Pokorný, Michal Jambor, Pavel Hutař

CONCEPTUAL PROBLEMS WITH FATIGUE CRACK CLOSURE AND PLASTICITY: INFLUENCE OF CYCLIC SOFTENING

11:40 - 12:00 Tereza Juhászová, Petr Miarka, Alejandro Cruces, Pablo Lopez Crespo, Lucie Malíková, Stanislav Seitl

DIC ANALYSIS OF FATIGUE CRACK WITH VARIOUS CRACK FRONTS IN COMPACT TENSION SPECIMENS MADE FROM AISI

12:00 - 12:20 -

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12:30 - 14:00 Lunch

14:00 - 14:30 Workshop Closing

Room: CONFERENCE HALL

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Centre for Advanced Academic Studies, Dubrovnik, Croatia, 11-13 April 2021

### Workshop Venue

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The address of the Conference Venue:  
CENTRE FOR ADVANCED ACADEMIC STUDIES  
Don Frana Bulica 4  
20000 Dubrovnik  
CROATIA

