Ústav stavební mechaniky
Stavební fakulta
Vysoké učení technické v Brně

Institute of Structural Mechanics
Faculty of Civil Engineering
Brno University of Technology

Pozvánka na přednášku / Lecture Announcement

Název / Title

Mechanisms of fatigue crack propagation in aluminium alloys

Přednášející / Lecturer

Pablo LOPEZ-CRESPO

University of Malaga

Jazyk / Language **English**

Thursday 20. 6. 2019, 11:00 h

FCE BUT, Brno, Veveří 331/95,
budova / Building C, místnost / Room 421
zasedací místnost ústavu STM

Abstrakt / Abstract

Fatigue of materials is one the principal causes of mechanical failures in engineering components. Crack tip mechanics is a powerful tool to understand such failures and can incorporate the plasticity developed around the tip and shielding mechanisms. Digital Image Correlation based full-field displacement maps are used to estimate the mixed-mode crack-driving force. The methodology allows the quantification of the effect of a range of contact phenomena: effects arising from interlocking, plastic deformation of crack face asperities and wedging generated as a consequence of sliding displacements of fatigue cracks have been identified. By evaluating the effective crack-tip stress intensity factor, crack opening levels can be quantified for both mode I and mode II. Moreover, the approach can take into account plasticity effects local to the crack in determining the stress intensity factor in different aluminium alloys commonly used in the aerospace industry. The data acquisition is obtained in a non-contacting fashion with experimental system that can be easily incorporated into industrial environments.

Přednášející / Lecturer

Dr. Pablo LOPEZ-CRESPO is Associate Professor at the University of Malaga (Spain). He graduated in Mechanical Engineering at the University of Malaga and then studied a PhD at the University of Sheffield (UK) also in the Dept. of Mechanical Engineering. Before he joined the University of Malaga as a lecturer, Pablo conducted post-doctoral research at the Ecole Normale Supérieure-Cachan (France) and the University of Manchester (UK). He is currently working on a number of projects for characterising fatigue failure of engineering materials, including crack tip mechanics and variable amplitude loading. Over the past few years, Pablo and his research group have applied tools such as digital image correlation, synchrotron X-ray diffraction, ACPD and 3D ultrafine FEM for understanding the fatigue mechanisms controlling the crack propagation of engineering alloys.

Organizátoři / Organizers

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Projekty / Projects

- Projekt 3.1 Podpora mezinárodní mobility akademických pracovníků – výjezdy (RP9093100202 / 11121)
- No. LO1408 "AdMaS UP – Advanced Materials, Structures and Technologies", supported by Ministry of Education, Youth and Sports under the „National Sustainability Programme I"