PRIFYSGOL ABERYSTWYTH UNIVERSITY
1872 · 150 · 2022 · 1872

Mathematics and Mechanics of Solids and Structures

Scientific challenges and methodologies for future societal development

7-9 June 2023

Welcome to ABERYSTWYTH

Wednesday 7 June

9:00 - 9:50 —— Reception

9:50 - 10:00 —— Welcome

Chair: Davide Bigoni

10:00-10:40 Key-Note: Alexander Movchan Waveguides subjected to gyroscopic forces. Temporal modulation. Imperfect interfaces

10:40-11:20 Key-Note: Valery Smyshlyaev A directional localisation and a Willis-type coupling in two-scale homogenisation of generalised elastodynamic microresonances

11:20-11:50 Mike Nieves Dynamic characterisation of mesoscale discrete systems: from 1D flexural waveguides to the generalised Rayleigh beam

12:00 - 13:00 —— Lunch (TaMeDa)

Wiener-Hopf Session

Chair: Alexander Movchan

13:00-13:40 Key-Note: Sergei Rogosin On solution to factorization problem for partly rational matrices of an arbitrary order

13:40-14:20 Key-Note: Malte Peter Water-wave diffraction and dissipation by floating or submerged poro-elastic plates factorization method

14:20-14:50 Lasha Ephremidze On some generalizations of the Janashia–Lagvilava spectral factorization method

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14:50 - 15:30 —— Coffee break

Chair: Sergei Rogosin

15:30-15:50 Grigori Giorgadze On the partial indices of piecewise constant matrix functions induced from Fuchsian system

15:50-16:10 Nataliia Adukova Factorisation of the matrix polynomial: what does exact factorisation mean?

16:10-16:30 Zurab Vashakidze (online) Wave propagation in a triangular lattice with discrete sources placed on line segments

Wine reception

Thursday 8 June

Chair: Malte Peter

9:00-9:40 Key-Note: Davide Bigoni Flutter instability & oscillatory instabilities in piecewise-smooth elastic structures

9:40-10:20 Key-Note Sergey Sorokin Recent advances in application of bi-orthogonality relations

10:20-10:50 Paolo Musolino The functional analytic approach for degenerating boundary value problems

10:50-11:20 Durvudkhan Suragan Inverse problems of identifying the time-dependent source coefficient for sub elliptic heat equations

11:20-11:40 David Wiedemann Polyconvexifcation of isotropic functions

12:00 - 13:00 — Lunch (TaMeDa)

13:00-13:40 Key-Note Alberto Salvadori Fracture propagation as a standard dissipative process: application to hydraulic fractures in energy storage materials

13:40-14:10 Daniel Peck Challenges in tracing the crack front of a hydraulic fracture in inhomogeneous media

14:10-14:30 Carlo Peruzzo Hydraulic fracture growth through layers of varying toughness

14:30 - 15:00 — Coffee break

Chair: Qiang Li / Andrea Piccolroaz

15:00-15:20 Marco Amato Elastic solids moving along frictionless constraints via configurational forces

15:20-15:40 Matteo Gaibotti Effects of different loadings on bifurcation of a coated elastic disk

15:40-16:00 Ilias Psilakis Assessment of fracture properties through Wedge Splitting Test and Inverse Analysis

16:00-16:20 Lorenzo Fiore Development of Thermoplastic Constitutive Models for Refractory Ceramics in Wide Temperature Range

16:20-16:40 Domagoj Uremovic Algorithm for adaptive insertion for anticipating crack path trajectory

16:40-17:00 Jovana Stojic Computational implementation and validation of constitutive models for heat-resistant devices

17:00-17:20 Kaoutar Anrhour Development of thermal shock protocol of experiment of carbon-based re-fractory materials

17:20-17:40 Shubhra Pande (online) Transmission conditions across a thin thermoelastic interphase

19:00 - ... — Dinner (Medina - town centre)

Friday 9 June

Chair: Alberto Salvadori

9:00-9:40 Key-Note: Qiang Li Adhesion instability and edge effect in elastic contact: Numerical simulation using the FFT-assisted BEM

9:40-10:10 Emanuel Willert A general approximate solution for the slightly non-axisymmetric normal contact problem of layered and graded elastic materials

10:10-10:40 Ivan Argatov Homogenization of chemically heterogeneous adhesive contact — Asymptotic models

11:10-11:40 Gennaro Vitucci Statistical mechanics informed continuum mechanics models for damage of biopolymers

11:40 - 11:50 Closure

12:00 - 13:00 — Lunch (TaMeDa)

12:00 - ... — Visit to the National Library of Wales

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