



SEMINAR

Institute of Theoretical and Applied Mechanics
of the Czech Academy of Sciences
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Czech Society for Mechanics,
International Measurement Confederation,
and Institute of Theoretical and Applied Mechanics, CAS

invite you to a lecture and discussion within the lecture series **ITAM Seminar**

Summary of the Mobility Project CZ.02.2.69/0.0/0.0/18_053/0016918

9:30 **Cristiana Lara Nunes, Ph.D. (ITAM):** Limewashes with vegetable oils for the protection of masonry facades

Abstract: Limewashes are lime-based paints that have been used since Classical times as finishing coats for walls. The main drawback of using lime-based paints for the protection of walls is with its low durability towards the action of water, particularly wind-driven rain, which mainly results in the loss of cohesion of the paint. To overcome this issue, additives that can improve the cohesion and grant water-repellent properties have been added to these paints since ancient times. In this work, three types of vegetable oils have been selected as water-repellent additives for improving the durability of limewashes towards the action of water while ensuring that the paint does not block water nor salt transport in porous building materials.

10:15 **Marcin Tatara, Ph.D. (Technical University Opole):** Model investigations of the aerodynamic force coefficients and Strouhal number of ice-accreted bridge cables in low and moderately turbulent wind

Abstract: The ice accretion on the bridge cables, has a significant influence on the flow field around the cables and their aerodynamics and can lead to much larger amplitude of cable vibrations under wind action than in the case of the dry cable. For this reason, the investigation of icing's influence on the aerodynamics of the bridge cables is a very important issue in considering the safety of cable-supported bridges. In presentation will be discussed the methodology and results of experimental wind tunnel investigations on the aerodynamic force coefficients and Strouhal number of ice-accreted bridge cables in low and moderately turbulent flow conditions, in relation to the various flow direction. The experiments were carried out in the Climatic Wind Tunnel Laboratory of the Czech Academy of Sciences in Telč.

11:00 **Tomáš Fíla, Ph.D. (ITAM):** Dynamic Beam-end Tests: Investigation Using Split Hopkinson Bar

Abstract: Tensile split Hopkinson bar was used to generate a tensile stress wave with a long duration that pulls a reinforcement bar with a short bond length out of a concrete block. As a very complex wave propagation behavior was observed during the impact, the forward and backward propagating waves have to be separated and subsequently used to properly calculate the bond stress-slip relation. Two redundant methods utilizing strain gauge signals and digital image correlation for separation of the longitudinal stress waves were employed to solve the problem. The presented method is considered suitable for evaluation of the dynamic bond stress-slip relation and produced reasonable quality results up to the full pull-out of the reinforcement bar from the concrete block.

**The lecture will be held on Friday, February 25, 2022 at 9:30 AM
at ITAM, Prague, small lecture room.**

The lectures will be also streamed using the zoom platform

<https://cesnet.zoom.us/j/97088553610?pwd=YUROZ2Mvalc3eHdTSy96UmZFWERjQT09>

Meeting ID: 970 8855 3610

Passcode: 168069

Lecture 2022/02

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