



**Czech Society for Mechanics
and Institute of Thermomechanics, CAS**

invite you to a lecture and discussion within
the lecture series **Institute of Thermomechanics Seminar**

**Complementary near field technique
for assessment of materials with added value**

given by

Dr. Adriana Savin

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The National Institute of Research and Development for Technical Physics (NIRDTP) is a part of the national institutes R&D network coordinated by the Ministry of Research and Innovation - National Authority for Scientific Research and Innovation. Institute performs basic and applied research in the field of advanced materials with novel structures and properties, devices (i.e., sensors, transducers, actuators, measuring systems) based on advanced materials, new preparation methods and characterisation techniques, including non-destructive evaluation and magnetometry, electrical and magnetic separation, and devices for applications in engineering, healthcare, and biotechnology.

Nondestructive Testing Department (NDT) performs theoretical and applicative research in the field of electromagnetic testing of cylindrical and plate products including composite materials; calculation of the fields scattered by material discontinuities located at different areas of the multilayered medium by solving the forward problems; theoretical optimization of the operation of different types of sensors. Department also performs ultrasonic testing, development of specific methods for ultrasonic signal processing with FFT, digital filtering, neuro-fuzzy networks, development of the algorithms for defects localization and automatic-classification of flaws.

In this lecture, a new possibility of using sensor with metamaterial lens for the nondestructive evaluation of metallic strip gratings and carbon fiber reinforced plastics will be presented. The sensor has enhanced spatial resolution due to the apparition of evanescent waves in the space between strips and between carbon fibers respectively, during the excitation by transversal electromagnetic field polarized along z-axis. The evanescent waves can be manipulated by a lens made from two conical Swiss rolls that act as a field concentrator. The detection has spatial resolution better than $\lambda/2000$.

**The lecture will be held on Thursday, February 15, 2018 at 14:00 in the building
of the Institute of Thermodynamics (lecture room B), Dolejškova 5, 182 00 Prague 8**