



LSGI RESEARCH SEMINAR

Modelling the Earth's Gravitational Field at all Scales

 **9 MAR 2026 (MON) (Cancelled)**

 **2:00 PM - 3:30 PM**

 **Z414, POLYU**

 **ENGLISH**

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ABSTRACT

The study of the Earth's gravitational field represents one of the three fundamental pillars of modern geodesy. In geodesy itself, its knowledge is essential for estimating the physical shape of the Earth, with the geoid being determined over land from data observed on or above the Earth's surface. While surface data provide the highest level of detail, airborne and especially satellite data fill in the gaps in areas where surface data cannot be collected. The transformation of measured data into the sought-after, but directly unobservable gravitational potential is performed using potential theory methods. An example would be the well-known Hotine integral transformation, which uses as input observed components of the gravitational acceleration vector, i.e., the gradient of the gravitational potential. Higher-order gradients collected by novel sensors on board aircraft or low-orbiting satellites have led to a new class of mathematical models that consider both currently available and predicted observable functionals of the gravitational potential. A combination of heterogeneous data observed with specific spatiotemporal and stochastic properties will be also presented and related challenges discussed.

BIOGRAPHY

Prof. Pavel NOVÁK is Professor of Geodesy, Vice-Dean for Research, and Director of the NTIS Research Centre of Excellence at the Faculty of Applied Sciences of the University of West Bohemia in Pilsen, Czech Republic. His research focuses on geodetic theory and its applications to gravity field modelling, precise positioning, and geodynamics. He completed his doctoral studies at the University of New Brunswick in Canada and worked as a researcher at the universities of Berlin (1991-1992), Calgary (1999-2001), and Stuttgart (2002-2004). Dr. Novák has been a member of the executive committees of the International Association of Geodesy (2015-2023), Global Geodetic Observation System (2019-2023), and the IUGG Commission on Mathematical Geophysics (since 2023). In 2015-2023, he served as President of the Inter-Commission Committee on Theory of the IAG. He is Fellow of the International Association of Geodesy. He currently is a member of the Editorial Board of the Journal of Geodesy. Dr. Novák has published almost 200 scientific studies, 110 of which in impact journals indexed in the Web of Science database. He has been a principal investigator of 10 research projects funded by the European Space Agency, European Commission, and the Czech Science Foundation. He participated in research projects supported by German and Canadian research foundations. He also regularly evaluates research project proposals for national research foundations such as NSF, NERC, NSERC, and DFG, among others.

Moderator:

Prof. Robert TENZER, Associate Professor, LSGI

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