



Dear Colleagues!

The V. Kupradze Institute of Mathematics at the University of Georgia is pleased to invite you to the Online Tbilisi Analysis & PDE Seminar. The seminar is held bi-weekly on Wednesdays at 20:00 (GMT+4) local time in Tbilisi.

Talk on April 8, 2026

Speaker: Prof. **Victor A. Kovtunenko**, Karl-Franzens University of Graz, Austria;

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The title of the lecture: “**Analytical and Numerical Methods for Solution of Non-smooth Dynamic Impact Problems**”

Abstract: In a broad scope, we are motivated by analytical and numerical solution of non-smooth, dynamic variational problems subjected to inequality constraints. Such models stem from various applications in mechanical, biological and environmental sciences like multi-body contact, indentation, non-penetrating cracks, fluid-driven fractures, railway foundation, MEMS and wearable devices. If impact occurs, then velocity and strain of elastic bodies become discontinuous in space and time. In the non-smooth case, we employ weak space-time variational formulation subject to impact boundary conditions. For 1D examples of elastic bars under axial impact against rigid obstacles, a non-smooth solution is constructed explicitly by generalizing d’Alembert formula for the wave equation, which is combined with Fourier series for longitudinal bar vibrations. The number of benchmark problems is solved numerically over a space-time finite element triangulation. The use of Lagrange multiplier and merit function is supported by semi-smooth Newton and primal-dual active-set numerical methods.

Date: April 8, 2026

Time: 20:00 (GMT+4) local time in Tbilisi;

(Compare to your local time: <https://www.timeanddate.com/worldclock/georgia/tbilisi>);

How to join:

The seminar is organized on the **Google Meet** platform. If you are already registered, you do not need to register again. Otherwise, to join the seminar, please send an email to kim@ug.edu.ge or register here:

<https://forms.gle/xfQJ9fg1uqe7CrZw6>.

You will then receive further information.

WEB of Seminar: <https://ug.edu.ge/en/tbilisi-analysis-and-pde-seminars>.

Organizers:

1. R. Duduchava, Institute of Mathematics, University of Georgia, Tbilisi, Georgia
2. E. Shargorodsky, Department of Mathematics, King’s College London, UK
3. A. Meskhi, Kutaisi International University, Kutaisi, Georgia

Secretary:

M. Tsaava, Institute of Mathematics, University of Georgia, Tbilisi, Georgia

Technical support:

G. Tutberidze, Institute of Mathematics, University of Georgia, Tbilisi, Georgia

Z. Vashakidze, Institute of Mathematics, University of Georgia, Tbilisi, Georgia



Google Meet Join Information

- **Video Call Link:** <https://meet.google.com/fes-ughx-mob>
- **Invitation (Calendar) Link:** <https://calendar.app.google/7GxkYetKVZVAEpcz8>