Dear Colleagues!

Institute of Mathematics of the University of Georgia is pleased to invite you to the Online Tbilisi Analysis & PDE Seminar. The seminar is held bi-weekly on Tuesdays at $20:00$ local time in Tbilisi.

Talk on March 19, 2024

Speaker: Prof. **Alex Iosevich**, The University of Rochester, USA;
https://people.math.rochester.edu/faculty/iosevich/

"Restriction Theory, Uncertainty Principles and Signal Recovery"

Abstract: Let $f : \mathbb{Z}_N^d \to \mathbb{C}$ and define $\widehat{f}(m) = N^{-d} \sum_{x \in \mathbb{Z}_N^d} \chi(-x \cdot m) f(x)$, the discrete Fourier transform, where $\chi(t) = e^{\frac{2\pi i t}{N}}$. Suppose that the signal f is transmitted via its Fourier transform and that some of the transmission is lost, i.e the values $\{\widehat{f}(m)\}_{m \in S}$ are unobserved for some $S \subset \mathbb{Z}_N^d$. The question, raised by Donoho and Stark in the late 80s is, are there reasonable assumptions on the signal f and the missing set of frequencies S such that f can be recovered exactly, despite the signal loss? Donoho and Stark showed that the uncertainty principle for the Fourier transform can be used to derive a set of sufficient conditions. In this talk, we are going to see that discrete restriction theory for the Fourier transform can be brought to bear on this problem. We are also going to discuss some discretization procedures that can be used to speed up the recovery process at the cost of a small error.

Date: March 19, 2024
Time: $20:00$ 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 **Cisco Webex Meetings**. If you are already registered, you do not need to register again. Otherwise, to join the seminar please send an e-mail to **seminarim@ug.edu.ge** or register here:

https://forms.gle/xfQJ9fg1uqe7CrZw6

You will then receive further information.

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

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3. G. Tephnadze, Institute of Mathematics, University of Georgia, Tbilisi

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