

Department of Mathematics, BGU

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# BGU Probability and Ergodic Theory (PET) seminar

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*On Thursday, December ,18 2025*

*At 11:10 – 12:00*

*In 101-*

Daniel Tsodikovich (the Institute of Science and Technology  
Austria)

will talk about

## **Local rigidity of the Suris potential as an integrable standard twist map**

Abstract: The Frenkel-Kontorova model is a standard model in solid state physics describing particles having nearest neighbor interactions. Mathematical analysis of this model leads to studying standard-like twist maps. In the 80's Suris found a remarkable family of potentials for this model with integrable dynamics. In some sense this is similar to the role that ellipses play in planar billiards. In the talk we will highlight this connection, via the action-angle coordinates of the two systems. Then we will also show that an integrable perturbation of a Suris potential has to be a Suris potential itself. This is in spirit of local results proven for the Birkhoff conjecture in billiards. The proof relies heavily on Fourier analysis, as well as construction of a suitable basis for  $L^2$  which captures the dynamics of the system. Joint work with Corentin Fierobe