

Department of Mathematics, BGU

Colloquium

On Tuesday, December 3, 2024

At 14:30 – 15:30

In Math 101-

Dmitry Kerner (BGU)

will talk about

How does the germ of a singular space look like?

Abstract: Manifolds are locally rectifiable (at each point) to \mathbb{R}^n or \mathbb{C}^n . The local Geometry, Topology, Algebra of singular spaces is much richer. Such a germ X is homeomorphic to the cone over $\text{Link}[X]$. In ‘most cases’ this homeomorphism cannot be chosen differentiable. This brings various pathologies.

The Lipschitz equivalence of space-germs has been under investigation in the last 30 years. It excludes various pathologies of homeomorphisms, but is ‘rough enough’ to prevent moduli.

The first natural question is whether/when the homeomorphism $X \sim \text{Link}[X]$ can be chosen bi-Lipschitz. The first obstructions to this are fast vanishing cycles on $\text{Link}[X]$. We detect lots of fast cycles. This gives countable (multi-index) series of ‘exotic Lipschitz structures’ on the germ $(\mathbb{R}^n, 0)$, all realizable as complex-analytic hypersurface germs.