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INFORMAL ANALYSIS SEMINAR
Saturday and Sunday, August 19-20, 2023

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LECTURES: Mathematical Sciences Building, Room 228., Second floor.
POSTER SESSION/REFRESHMENTS/LUNCHES: Third Floor Lounge.

The Mathematical Sciences Building is located on 1300 Lefton Esplanade, Kent, OH 44242. To search it on Google Maps, please, use Mathematics and Computer Science Building, Kent, OH 44243.

Saturday, August 19

11:00 - 11:30	Coffee in Third Floor Lounge MSB
11:30 - 12:30	Alex Iosevich
12:30 - 1:30	Lunch in Third Floor Lounge MSB
1:30 - 2:30	Itai Shafrir
2:30 - 3:30	Break/Poster Session, Third Floor Lounge
3:30 - 4:30	Alex Iosevich
4:30 - 5:00	Break
5:00 - 6:00	Itai Shafrir
6:30pm	Dinner: TBA.

Sunday, Augiust 20

09:00 - 09:30	Coffee in Third Floor Lounge MSB
09:30 - 10:30	Alex Iosevich
10:30 - 11:00	Break
11:00 - 12:00	Itai Shafrir
12:00 - 1:00	Lunch in Third Floor Lounge MSB
1:00 - 2:00	Alex Iosevich
2:00 - 2:30	Break
2:30 - 3:30	Itai Shafrir

Analytic, combinatorial and arithmetic aspects of finite point configurations.

Alex Iosevich

Abstract: The basic question we ask is, if a subset of a given vector space is large, in terms of the number of points or its dimension, depending on the context, does it contain a congruent copy of your favorite point configuration? We are going to discuss some recent and not so recent developments pertaining to this question, including the celebrated conjectures of Erdos and Falconer, positive density results of Bourgain, Furstenberg-Katznelson-Weiss, and Ziegler, as well as connections between all these problems.

On a class of singular perturbation problems of Ginzburg-Landau type.

Itai Shafrir

Abstract: We are interested in the asymptotic behavior, as $\varepsilon \to 0$, of minimizers for the energy

$$E_\varepsilon(u) = \int_\Omega |\nabla u|^2 + \frac{1}{\varepsilon^2} W(u)$$

where Ω is a smooth and bounded domain in $\mathbb{R}^2$, over the class of maps $u : \Omega \to \mathbb{R}^2$ satisfying the boundary condition $u = g$ on $\partial\Omega$. Here $W : \mathbb{R}^2 \to [0, \infty)$ is a smooth function vanishing on a smooth closed curve Γ, and $g : \partial\Omega \to \Gamma$ is a given smooth map. The model problem is that of the Ginzburg-Landau functional, where $W(u) = (1 - |u|^2)^2$ and $\Gamma = S^1$, that was studied by Bethuel-Brezis-Hélein and subsequently by many others. We will discuss this problem and different variants of it, for example, what happens when g does not take necessary its values in Γ.