

1172-49-27

**Ihsan Topaloglu\*** (iatopaloglu@vcu.edu). *Least Wasserstein distance between disjoint shapes with perimeter regularization.*

In this talk I will consider a minimization problem related to a simplified model for lipid bilayer membranes. Representing the densities of the hydrophobic tails and hydrophilic heads of the two part lipid molecules by sets  $E$  and  $F$ , respectively, the minimization problem is given by

$$\inf \{P(E) + \lambda W_p(E, F) : E, F \subset \mathbb{R}^n, |E \cap F| = 0, |E| = |F| = 1\}.$$

Here  $P(E)$  denotes the perimeter of  $E$ ,  $W_p$  denotes the  $p$ -Wasserstein distance on the space of probability measures, and  $\lambda > 0$  is a constant. Answering a conjecture by Buttazzo, Carlier and Laborde, I will show that minimizers exist in any dimension and for all values of  $\lambda > 0$  and  $p \in [1, \infty)$ . This is a joint work with Michael Novack and Raghavendra Venkatraman. (Received August 06, 2021)