1141-60-284 **Mykhaylo Shkolnikov*** (mshkolni@gmail.com) and **Sergey Nadtochiy**. *Particles interacting through their hitting times: neuron firing, supercooling and systemic risk.*

I will discuss a class of particle systems that serve as models for supercooling in physics, neuron firing in neuroscience and systemic risk in finance. The interaction between the particles falls into the mean field framework pioneered by McKean and Vlasov in the late 1960s, but many new phenomena arise due to the singularity of the interaction. The most striking of them is the loss of regularity of the particle density caused by the self-excitation of the system. In particular, while initially the evolution of the system can be captured by a suitable Stefan problem, the following irregular behavior necessitates a more robust probabilistic approach. Based on joint work with Sergey Nadtochiy. (Received July 31, 2018)