GUANYING PENG, Worcester Polytechnic Institute
Rigidity of Aviles-Giga limit states with L^p entropy productions

The Aviles-Giga functional is a classical energy functional related to the theories of smectic liquid crystals and thin-film blisters. Its variational analysis has received significant attention. The Aviles-Giga energy provides sequences of maps converging to weak solutions m of the 2D Eikonal equation, whose entropy productions are Radon measures controlled by the energy. It is conjectured that these entropy production measures are concentrated on the one-dimensional jump set of m. In particular, the entropy production measures should vanish if they coincide with L^p functions. In recent work, we establish this consequence of the conjecture under natural boundary conditions and the assumption that p is not too small. This is joint work with Xavier Lamy and Andrew Lorent.