

***Peierls instability and Kekulé distortion in graphene*****Thaddeus Roussigné**

In this talk, I would like to present recent work in condensed matter with David Gontier and Eric Séré, where we investigate a conventional tight-binding model for graphene. In this model, distortion of the honeycomb lattice is allowed, but penalized by a quadratic energy. We prove that the optimal 3-periodic lattice configuration has Kekulé O-type symmetry, and that for a sufficiently small elasticity parameter, the minimizer is not translation-invariant. Conversely, we prove that for a large elasticity parameter the translation-invariant configuration is the unique minimizer.