Abstract:

This talk is based on joint work with Slim Ibrahim, Nader Masmoudi and Federica Sani. The Trudinger-Moser inequality gives uniform exponential integrability in place of the (failed) critical Sobolev embedding. In this talk, we consider existence of maximizers for general nonlinearity of the optimal growth on the disk and on the whole plane, respectively. The problem is delicate because concentration of energy may or may not happen depending on lower order nonlinearity. We derive a very sharp threshold between existence and non-existence cases for the nonlinearity in an explicit asymptotic expansion.