Existence of solution for a singular Liouville equation via variational methods

David Ruiz[1]

We consider a singular Liouville equation on a compact surface, arising from the study of Chern-Simons vortices in a self dual regime. A first novelty in our approach is a definition of barycenter which is very convenient for our purposes. Indeed, we give improved versions of the Moser-Trudinger inequality for functions with barycenter on the singularities. This is the main ingredient or our variational scheme, from which we prove new existence results.
This is joint work with Andrea Malchiodi (SISSA, Italy).

[1] *Departamento de Análisis Matemático*
Universidad de Granada