Non-local ODEs in conformal geometry

María Del Mar González
Universidad Autónoma de Madrid
mariamar.gonzalezn@uam.es

When one looks for radial solutions of an equation with fractional Laplacian, it is not generally possible to use usual ODE methods. If such equation has some conformal invariances, then one may rewrite it in Emden-Fowler (cylindrical) coordinates and to use the properties of the conformal fractional Laplacian on the cylinder. After giving the necessary background, we will briefly consider two particular applications of this technique: 1. Symmetry breaking, non-degeneracy and uniqueness for the fractional Caffarelli-Kohn-Nirenberg inequality (joint work with W. Ao and A. DelaTorre). 2. Existence and regularity for fractional Laplacian equations with drift and a critical Hardy potential (joint with H. Chan, M. Fontelos and J. Wei).