



**THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY**

**Department of Mathematics**

**SEMINAR ON PDE**

**Uniqueness of least-energy solutions to the fractional Lane-Emden equation in the ball**

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**Abstract**

In this talk we will show the uniqueness of least-energy solutions for the fractional Lane-Emden equation posed in the ball under homogeneous Dirichlet exterior conditions. This is a non-local semilinear equation with a superlinear and subcritical nonlinearity. Existence of positive solutions follows easily from variational methods, but uniqueness is quite complicated. In the local case, the uniqueness of positive solutions follows from the result of Gidas, Ni and Nirenberg. Indeed, by using the moving plane method, they proved radial symmetry of the solutions which allows the application of ODE techniques. In the non-local case, these arguments do not seem to work. Our proof makes use of Morse theory, and it is inspired by some results obtained by C. S. Lin in the '90s. The talk is based on a joint work with Enea Parini.

**Date: 12 September 2024 (Thursday)**

**Time: 4:00pm**

**Zoom Meeting: <https://hkust.zoom.us/j/99610611987> (Passcode: 671240)**

*All are Welcome!*