1147-35-811   **Shaya Shakerian*** (`shaya.shakerian@gmail.com`), 450 Ellwood Beach Drive apt 11, Goleta, CA 93117. *Borderline variational problems for fractional Hardy-Schrödinger operators.*

In this talk, we investigate the existence of ground state solutions associated to the fractional Hardy-Schrödinger operator on Euclidean space and its bounded domains. In the process, we extend several results known about the classical Laplacian to the non-local operators described by its fractional powers. Our analysis show that the most important parameter in the problems we consider is the intensity of the corresponding Hardy potential.

The maximal threshold for such an intensity is the best constant in the fractional Hardy inequality, which is computable in terms of the dimension and the fractional exponent of the Laplacian. However, the analysis of corresponding non-linear equations in borderline Sobolev-critical regimes give rise to another threshold for the allowable intensity. Solutions exist for all positive linear perturbations of the equation, if the intensity is below this new threshold. However, once the intensity is beyond it, we had to introduce a notion of *Hardy-Schrödinger Mass* associated to the domain under study and the linear perturbation. We then show that ground state solutions exist when such a mass is positive. (Received January 29, 2019)