



UNIVERSITÀ DI PARMA

DIPARTIMENTO DI SCIENZE MATEMATICHE, FISICHE E INFORMATICHE

<http://smfi.unipr.it>

Seminario di Analisi Matematica



Professor **Ihsan Topaloglu**,
Virginia Commonwealth University

Martedì 3 marzo 2020, ore 14:00
Aula B, Plesso di Matematica

Anisotropic Extensions of the Liquid Drop Model

Tutti gli interessati sono invitati a partecipare

Organizzatori: Proff. Alessandra Lunardi e Giampiero Palatucci

Abstract: *In this talk I will present on recent results regarding a variant of Gamow's liquid drop model, initially developed to predict the shape of atomic nuclei, with an anisotropic surface energy. This universal model can be considered as a perturbation of the anisotropic isoperimetric problem by nonlocal long-range interactions. Under suitable regularity and ellipticity assumptions on the surface tension, Wulff shapes are minimizers in this problem if and only if the surface energy is isotropic. Moreover for smooth anisotropies, in the small nonlocality regime, minimizers converge to the Wulff shape in C^1 -norm with a quantitative rate of convergence. It is also possible to obtain a quantitative expansion of the energy of any minimizer around the energy of the Wulff shape which yields a geometric stability result for minimizers. For certain crystalline surface tensions one can determine the global minimizer explicitly and obtain its exact energy expansion in terms of the nonlocality parameter. Results will be drawn from projects joint with Rustom Choksi, Robin Neumayer, and Oleksandr Misiats.*