



CONSIGLIO NAZIONALE DELLE RICERCHE
ISTITUTO NAZIONALE DI OTTICA

AVVISO DI SEMINARIO

Il giorno martedì 19 dicembre 2017 alle ore 14,30
presso l'Area della Ricerca CNR di Pisa, Aula 33, piano Terra, Edificio "A"

il Prof. Tommaso Macrì

Universidade Federal do Rio Grande do Norte, Natal, Brazil

terrà un seminario sul tema:

Superfluid filaments and vortices in dipolar Bosons

ABSTRACT

Droplets are very common in nature, from liquid water to superfluid

Helium and nuclear matter. In this talk I will discuss the zero temperature properties of an ensemble of bosons interacting via dipolar interactions in three dimensions in free space. Upon increasing the strength of the dipolar interaction and at sufficiently high densities we find a wide region where dipolar droplets and filaments are stabilized along the direction of the external field. Most interestingly by computing the superfluid fraction we conclude that superfluidity is anisotropic and vanishes along the orthogonal plane. Finally I will present the instability mechanisms of vortex lines along the longitudinal direction of the droplet. Such instabilities can be quantitatively understood via an energetic argument.