

Colloqui della Classe di Scienze

Anno Accademico 2020/2021

Scuola Normale Superiore
Piazza dei Cavalieri, 7 - PISA

9 GIUGNO 2021
ore 15.00

SYLVIA SERFATY

New-York University, New York, USA

Systems of points with Coulomb interactions

ABSTRACT:

Large ensembles of points with Coulomb interactions arise in various settings of condensed matter physics, classical and quantum mechanics, statistical mechanics, random matrices and even approximation theory, and they give rise to a variety of questions pertaining to analysis, Partial Differential Equations and probability. We will first review these motivations, then present the "mean-field" derivation of effective models and equations describing the system at the macroscopic scale. We then explain how to analyze the next order behavior, giving information on the configurations at the microscopic level and connecting with crystallization questions, and finish with the description of the effect of temperature.