INSTITUTUL DE MATEMATICĂ “SIMION STOILOW” AL ACADEMIEI ROMÂNE

Conferința lunară

The Landau-de Gennes theory of liquid crystals

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la sediul **IMAR,** amfiteatrul “Miron Nicolescu”, parter

Abstract: Some of the most impressive technological applications of our times are based on complex materials, that exhibit remarkable properties. The nematic liquid crystals are a paradigmatic example and an entry point into this fascinating universe. Despite extraordinary technological applications these materials are not yet understood at a fundamental, basic level, and there exist several major theories that are competing in their attempt to describe these materials. We will present the Landau-de Gennes theory, that uses matrix-valued functions, a very successful theory in the physics community, whose rigorous mathematical treatment has started to develop only in the recent years. A significant feature of this theory is related to the interaction between topology, geometry and nonlinear partial differential equations. We will present a short introduction to this theory, focusing on the aspects that require non-trivial interactions between the before-mentioned mathematical areas.