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הקרן למדענים אורחים
ע"ש נירית ומיכאל שאול

TEL AVIV UNIVERSITY
אוניברסיטת תל אביב

Professor Bernhard Mehlig

Department of Physics
University of Gothenburg, Sweden

פרופסור ברנרד מהליג

המחלקה לפיזיקה
אוניברסיטת גוטנבורג, שוודיה

Mechanical Engineering Seminar | סמינר הנדסה מכנית

STATISTICAL MODELS FOR TURBULENT AEROSOLS

Heavy particles suspended in an incompressible randomly mixing or turbulent flow form a 'turbulent aerosol'. When the inertia of the particles is significant then the particles respond in intricate ways to the turbulent fluctuations of the carrying fluid: independent particles may cluster together and form spatial patterns even though the fluid is incompressible, and the relative speeds of nearby particles may fluctuate strongly. Both phenomena depend sensitively on the inertia of the particles, affect collision rates and collision outcomes, and thus the long-term fate of the turbulent aerosol. In recent years it has become clear that important aspects of the dynamics of turbulent aerosols can be understood in terms of statistical models. In this talk I describe how statistical-model calculations have led to a detailed understanding of the mechanisms that determine inertial-particle dynamics in turbulent aerosols.

The Lecture will be held on Monday,
9 January 2017, at 14:00, Room 206,
Wolfson Mechanical Engineering Building,
Tel Aviv University, Ramat Aviv

ההרצאה תתקיים ביום שני,
9 בינואר 2017, בשעה 14:00,
חדר 206, בניין וולפסון להנדסה מכנית,
אוניברסיטת תל-אביב, רמת-אביב

Biological and Soft Matter Seminar | סמינר ביופיסיקה וחומר רך

CONFINED POLYMERS IN THE EXTENDED DE GENNE REGIME

In the 'extended de Gennes regime' the problem of describing the conformations of a semiflexible polymer confined to a channel can be mapped onto the weakly self-avoiding random-walk model. For large contour lengths the asymptotically exact solution of this model predicts how the conformational fluctuations of the confined polymer depend upon the channel dimensions and upon the physical properties of the polymer, its effective width and persistence length. The extended de Gennes regime (where the polymer is neither weakly nor strongly confined) has recently been studied intensively experimentally and by means of computer simulations of worm-like chain models. In this talk I explain the mapping, summarize the predictions derived from the exact solution, and compare the predictions to results of computer simulations and experiments of DNA molecules confined to nanochannels. I conclude by summarizing open questions.

The Lecture will be held on Wednesday,
11 January 2017, at 11:10,
Room 118, Kaplun Physics Building,
Tel Aviv University, Ramat Aviv

ההרצאה תתקיים ביום רביעי,
11 בינואר 2017, בשעה 11:10,
חדר 118, בניין קפלון לפיזיקה,
אוניברסיטת תל-אביב, רמת-אביב

Light refreshments will be served before the lectures | כיבוד קל יוגש לפני ההרצאות