chemisch physikalische gesellschaft

Gegründet im Jahre 1869 von H. Hlasiwetz, J. Loschmidt, J. Petzval und J. Stefan

EINLADUNG

zum Vortrag
von

Prof. Dr. David Reguera

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How well do we understand nucleation phenomena?

am
Dienstag, 8. Mai 2018, um 17:30 Uhr

Ort: Lise-Meitner-Hörsaal, Fakultät für Physik, Universität Wien,
1090 Wien, Strudlhofgasse 4 / Boltzmanngasse 5, 1. Stock

Barrierefreier Zugang: Boltzmanngasse 5, Lift, 1. Stock rechts über den Gang zum Hintereingang des Hörsaals

Abstract:

Matter appears in nature in different aggregation states called phases. How atoms and molecules of which matter is made manage to shift between these different states is one of the most fascinating processes in physics. These phase transitions are commonly controlled and triggered by a non-equilibrium physical mechanism, called nucleation, that describes the formation of the first seeds of the new phase. Nucleation is behind many phenomena of utmost scientific and technological interest, ranging from nuclear systems and biological assembly to galaxy formation. However, due to its rare and non-equilibrium nature, it is still one of the few classical problems that remains incompletely understood. In fact, deviations between theoretical predictions and experiments can reach several orders of magnitude even in the simplest case of condensation. In this talk, I will review the essential aspects of this phenomenon and the challenges it poses to current research. In particular, I will summarize our recent efforts to test the validity and accuracy of classical nucleation theory using computer simulations, and discuss how far theory is from providing a quantitative understanding of one of the most crucial processes in atmospheric and condensed matter science.