量子物理学・ナノサイエンス第 164 回セミナー

Solid-state wetting and dewetting

講師　：　**Dr. Olivier Pierre-Louis**

Université Lyon 1, CNRS, France

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場所　：　本館 1 階　H155B　理学院セミナー室

概　要

At the nanoscale, the morphological evolution of solid films and islands under annealing is strongly influenced by wetting properties. Inspired by analogies with recent advances in the wetting behavior of liquids, we explore two situations where solid-state wetting plays a crucial role.

In a first part, we discuss the dewetting dynamics of a thin solid film based on 2D Kinetic Monte Carlo (KMC) simulations and analytical models. We focus on the role of the faceting of the dewetting rim, which changes the asymptotic behavior of the dewetting velocity. In addition, we analyze the instability of the dewetting front, which leads to the formation of fingers. We also discuss the consequences of the wetting potential on the dewetting process and on the triple-line dynamics.

In a second part, we will present some results on the wetting statics and dynamics of islands (or nanoparticles) on surface with topographical structures of large aspect ratio, such as pillars or trenches using 3D KMC simulations including elastic effects.

連絡教員　物理学系　竹内　一将（内線 2298）

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