

Sommerfeld Theory Colloquium

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UNCONVENTIONAL TYPES OF PHASE TRANSITIONS DUE TO INTERPLAY OF FINITE SIZE AND INTERFACIAL EFFECTS

As generic systems for confined nanosystems, Ising models with "competing walls" on which surface fields of opposite sign act, will be considered in the first part of this talk. Such systems do not acquire a nonzero total magnetization at the transition temperature of the bulk, since domains of opposite magnetization are stabilized. At a lower temperature, a magnetization appears (discontinuously in the thermodynamic limit, though this transition can be the limiting case of a second order transition). Depending on the geometry, this transition is related to wetting, wedge filling, or cone filling transitions. Phenomenological finite size scaling concepts about these transitions are discussed, and evidence from Monte Carlo simulations is presented. In the second part of the talk, the "droplet evaporation/condensation transition" will be described, and the consequences for our understanding of "van der Waals loops" will be discussed.

Wednesday, 9th May 07, 11.15 h, Room 348 / 349, Theresienstr. 37 / III