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Phase Transitions

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ABSTRACT. As in the past, the workshop brought together researchers with a background in physics, partial differential equations and continuum mechanics and statistical mechanics. Equilibrium and dynamic phase transitions were discussed. A wide range of systems from solid-solid phase transitions to the quantum Curie Weiss model were considered.

Mathematics Subject Classification (2000): 35, 49, 74, 80, 82.

Introduction by the Organisers

The present workshop was part of a series with the topic of phase transitions, designed especially to bridge the gap in notation and notions of phase transition in different communities, i.e. physics, statistical mechanics, partial differential equations. Judging from the lively discussions it seem to have achieved its goal at least in part. This workshop is the last organized by H. W. Alt, S. Luckhaus, E. Presutti and E.Salje who are handing over to a new team of organizers. An active area of research discussed in many of the talks was the motion of phase interfaces (Dirr, Dreyer, Eck, Esposito, Freistuehler, Melcher, Planes, Zimmer) also in hyperbolic scaling where many questions are still open. The interaction phase interfaces with crystal structure was another topic (Bismayer, Conti, Janssen) for the physics and pde community alike. From quantum statistical mechanics the Curie Weiss model was discussed (Grimmett, Ioffe). Random potentials or environments were an important topic (Bovier, Dirr, Planes , Orlandi) and models of kinetic type played a bigger role than in the previous workshops (Bellettini, Esposito, Marra, Theil). A strength of the workshop were the discussions between the different groups of participants and the organizers feel that in the field of phase transitions this interdisciplinary discourse is particularly important.

