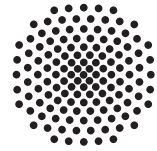


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Stuttgarter Physikalisches Kolloquium

Max-Planck-Institut für Festkörperforschung
Fachbereich Physik, Universität Stuttgart

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Hybrid

Login data will be announced by e-mail and on the colloquium webpage.

Dienstag, 9. Mai 2023

16.15 Uhr

Lecture Hall 2D5

Max-Planck-Institut für Festkörperforschung, Heisenbergstraße 1, 70569 Stuttgart-Büsnau

Emergence, Reduction and Phase Transitions

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Abstract

Critical phase transitions and their characteristic universal behavior have been at the center of recent debates around reduction and emergence in physics. For some, phase transitions are a case of successful reduction, while for others they constitute the hallmark of emergence. Not so many years ago, Butterfield (2011a, 2011b, 2014) and Norton (2014) suggested that phase transitions combine both emergence and reduction. In this talk, I develop further this compatibilist view and argue that critical phase transitions instantiate two different notions of weak emergence that I call “few-many” and “coarse-grained” emergence. At the same time, I will contend that they are successful cases of intertheoretic reduction, understood as a family of models that can be combined in order to achieve certain epistemic and ontological goals.