



Physikalisches Kolloquium

Wintersemester 2009/10

Termin: 16.11.2009, 16:15 Uhr
Ort: Hörsaal O25/H2

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Synchronization and Emergence in Networks of Dynamical Systems

Many natural and man-made systems are intrinsically complex entities consisting of a large number of interacting components. A particularly interesting concept in this context is Emergence, that is, the question of how novel dynamics arise from the interaction of simple units. This talk will introduce some key concepts and recent results in this area using mathematical models. We shall consider networks of coupled systems, taking into account the time delays for signal transmission between them, and demonstrate the emergence and suppression of chaos in the synchronized state. Furthermore, we shall introduce the recently-discovered phenomenon of chimera states, where synchronized and uncoordinated behavior co-exist in the same system at different spatial locations.