



**UNIVERSITÄT
BIELEFELD**

Fakultät für Physik

Physikalisches Kolloquium

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Critical transitions in Earth system dynamics

Both theory and evidence from paleoclimate proxy records encoding the evolution of the climate system in the long-term past suggest that some components of the Earth system can respond abruptly to gradual changes in forcing. These transitions can be described in terms of bifurcations in nonlinear dynamical systems, which also hints at means to anticipate them. After giving some basic elements of the underlying theory, we review some of the potentially multistable subsystems, focussing on paleoclimate and observational data. These include the polar ice sheets, the Atlantic Meridional Overturning Circulation, as well as tropical rainforests and monsoon systems. We discuss different ways to predict their future evolution under anthropogenic forcing.

Monday, January 24, 2022, 4:15 p.m.

via zoom