PHYSIKALISCHES KOLLOQUIUM

Sommersemester 2026

Das Kolloquium findet (soweit nicht anders angegeben) **jeweils montags um 14:15 Uhr im Röntgen-Hörsaal** des Physikalischen Instituts, Hubland Campus Süd, Universität Würzburg **und online via Zoom statt**.
Zugangsdaten siehe https://www.physik.uni-wuerzburg.de/aktuelles/veranstaltungen-aus-der-physik/physikalisches-kolloquium/

18.05.2026

Vorstellungsvortrag im Rahmen des Habilitationsverfahrens
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Strongly correlated broken-symmetry phases: From many-body methods to quantum platforms

Abstract

Broken-symmetry phases in strongly correlated systems emerge from a delicate balance between local interactions and collective fluctuations and remain challenging to describe beyond mean-field approaches. In this talk, I discuss recent progress in extending many-body methods to regimes where symmetry is spontaneously broken, with an emphasis on how correlations reshape both single-particle properties and collective excitations.
By means of selected examples, I will show how two-particle approaches capture the feedback between order and fluctuations, leading to nontrivial renormalizations of collective modes. Building on this perspective, I then address how fluctuation diagnostics can be extended to broken-symmetry phases, providing a way to disentangle the microscopic processes underlying ordered states.
Finally, I briefly comment on how these ideas connect to current experimental platforms, where correlated and symmetry-broken phases can be probed in a controlled way.

Für die Dozentinnen bzw. Dozenten der Fakultät

Prof. Dr. Neuenfeld, Dr. Feichtner, Dr. Ünzelmann, Hr. Plote, Hr Schwarzkopf