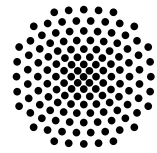


Stuttgarter Physikalisches Kolloquium

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

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

Dienstag, 18. Januar 2022

16.15 Uhr

Online-Vortrag

Stuttgarter Max-Planck-Institute, Heisenbergstraße 1, 70569 Stuttgart-Büsnau

Designing interactions in tweezer arrays by Rydberg dressing

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Abstract

The strong dipolar interactions between Rydberg atoms are utilized to build designer quantum spin systems and as a resource for neutral-atom quantum computing. These interactions are routinely dynamically controlled by laser light. Here we discuss novel methods to also control the spatial shape and the character, i.e. the directionality in spin space, of the interactions by laser light. We summarize experiments in optical tweezers and lattices, and show results, which demonstrate flexible interaction design. Full optical control of these interactions provides a powerful resource for future quantum computation and simulation experiments.