



**PHYSICAL COLLOQUIUM**  
**INVITATION**

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Monday, 28.06.2021, 4.15 p.m.,  
video conference: <https://meeting.uol.de/b/anj-2vc-j6s-fwe>

speaks

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about

**"Simulating twisted bilayers with ultra-cold atoms"**

The possibility of creating crystal bilayers twisted with respect to each other has led to the discovery of a wide range of novel electron correlated phenomena the full understanding of which is still under debate.

Here we propose and analyze a method to simulate twisted bilayers using cold atoms in state-dependent optical lattices. Our proposed setup can be used as an alternative platform to explore twisted bilayers which allows one to control the inter-and intralayer coupling in a more flexible way than in the solid-state realizations.

We focus on square geometries but also show how it can be extended to simulate other lattices which show Dirac-like physics. This setup opens a path to observe similar physics, eg, band narrowing, with larger twist angles, to rule out some of the mechanisms to explain the observed strongly correlated effects, as well as to study other phenomena difficult to realize with crystals.

All interested persons are cordially invited.

Sgd. Dr. Carlos Anton-Solanas  
AG Quantenmaterialien Prof. Dr. Christian Schneider