

FAKULTÄT für PHYSIK  
LUDWIG-MAXIMILIANS-UNIVERSITÄT  
MÜNCHEN/GARCHING

PHYSIK-DEPARTMENT  
TECHNISCHE UNIVERSITÄT MÜNCHEN  
MÜNCHEN/GARCHING

## Garching Maier-Leibnitz-Kolloquium

Donnerstag, 21.07.2022, 16<sup>15</sup> Uhr

Hörsaal der LMU in Garching, Am Coulombwall 1  
Treffen zum gemeinsamen Kaffee 16 Uhr

Dr. Mathias Becker

(Physik Department, Technische Universität München)

### Impact of Non-Perturbative Effects on Simplified t-Channel Dark Matter

A non-minimal dark sector could explain why WIMP dark matter has evaded detection so far. Based on the extensively studied example of a simplified t-channel dark matter model involving a colored mediator, we demonstrate that the Sommerfeld effect and bound state formation must be considered for an accurate prediction of the relic density and thus also when inferring the experimental constraints on the model. We find that parameter space thought to be excluded by LHC searches and direct detection experiments still remains viable. Moreover, we point out that the search for bound state resonances at the LHC offers a unique opportunity to constrain a wide range of dark matter couplings inaccessible to prompt and long-lived particle searches.

*Hybrid online access via ZOOM:*

<https://lmu-munich.zoom.us/j/98457332925?pwd=TWc3V1JkSHpyOTBPQVIMelhuNnZ1dz09>

Meeting ID: 984 5733 2925

Passcode: 979953

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