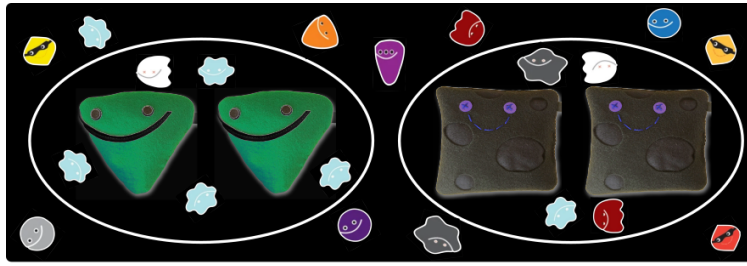


Quarkonia meet Dark Matter



Contribution ID: 15

Type: not specified

Higgs enhancement and bound state formation in coannihilation scenarios of dark matter

Thursday 17 June 2021 22:20 (30 minutes)

Given the growing constraints on WIMP dark matter, coannihilation scenarios gain more and more interest. However, in order to theoretically predict the relic density, different effects have to be taken into account. In colored coannihilation scenarios, the importance of long-range interactions mediated by gauge bosons, the so-called Sommerfeld effect, is by now well established. Due to its mass, the Higgs boson as mediator was usually neglected in this context. However, we demonstrate that the Sommerfeld effect via Higgs exchange can lead to similarly striking effects. In the same regime, also bound state formation via the emission of a gauge boson can become relevant, altering the prediction of the dark matter abundance by its subsequent decay. We demonstrate that the Higgs boson as long-range force mediator similarly alters the bound state formation process and hence impacts the relic density prediction sizeably such that it must be taken into account for determining the viable parameter space of these scenarios. We conclude by commenting on implications for experimental searches.

Presenter: HARZ, Julia

Session Classification: Main program