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【374】 $Sp(4)$ SIMP Dark Matter on the Lattice

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The Strongly Interacting Massive Particle (SIMP) paradigm provides dark matter (DM) candidates as pseudo-Goldstone bound states of dark fermions under a new gauge group. Freeze-out then occurs through $3 \rightarrow 2$ dark matter self-annihilation and points to DM masses of $O(100 \text{ MeV})$. We study the spectrum of the lightest mesons of $Sp(4)$ gauge theory with 2 fundamental Dirac fermions using lattice gauge theory. There are 5 pseudo-Goldstone bosons which can self-annihilate. We investigate the explicit breaking of the flavour symmetry and report that one pseudo-Goldstone is lighter than the others which are still mass-degenerate.

Authors: MAAS, Axel Torsten (University of Graz); ZIERLER, Fabian (University of Graz)

Presenter: ZIERLER, Fabian (University of Graz)

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