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Kimiko Yamashita "Positivity Bounds on Higgs-Portal Dark Matter"

Tuesday, 7 November 2023 17:00 (25 minutes)

We consider the positivity bounds for WIMP scalar dark matter with effective Higgs-portal couplings up to dimension-8 operators. Taking the superposed states for Standard Model Higgs and scalar dark matter, we show that the part of the parameter space for the effective couplings, otherwise unconstrained by phenomenological bounds, is ruled out by the positivity bounds on the dimension-8 derivative operators. We find that dark matter relic density, direct and indirect detection, and LHC constraints are complementary to the positivity bounds in constraining the effective Higgs-portal couplings. We also consider the relic density and positivity bounds for freeze-in scalar dark matter.

Session Classification: Short talks