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Constraints on CP-Violating Higgs Portal Majorana Dark Matter

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In this talk I discuss the viability of higgs portal majorana dark matter in light of current constraints, considering parameter ranges motivated by the thermal relic abundance and the potential GCE annihilation signal. Typically in these types of models, the mass of the dark matter is tuned so that annihilation occurs through the higgs resonance, in order to get a large enough annihilation signal while avoiding direct detection constraints. By considering a CP violating coupling, I explore an alternative possibility where this hierarchy between annihilation and scattering strengths can be achieved by tuning the phase of the dark matter higgs coupling, since the imaginary part of the coupling controls annihilation while the real part controls scattering. By analyzing both the dark matter EFT and several UV completions, I will show there is viable parameter space in the minimal singlet-doublet case, despite strong EDM constraints on the CP violating phase.

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