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# Higgs enhancement and bound state formation in coannihilation scenarios

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Given the growing constraints on WIMP dark matter, coannihilation scenarios are gaining more and more interest. However, in order to theoretically predict the relic density with a certain precision for a specific model, different effects have to be taken into account. We introduce a so far neglected effect - Higgs enhancement - that significantly alters the prediction of the dark matter abundance. While the importance of long-range interactions mediated by vector bosons is well established, the Higgs is usually thought to transmit contact interactions only. We show however that the Higgs can lead to similarly striking effects. Furthermore, we will demonstrate the significant impact of bound state formation via emission of a gauge boson in coannihilation scenarios featuring non-Abelian long-range interactions. While its impact was previously disregarded in the literature, we will show examples in which the dark matter density prediction would be off by up to 240% when neglecting radiative formation and decay of particle-antiparticle bound states.

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