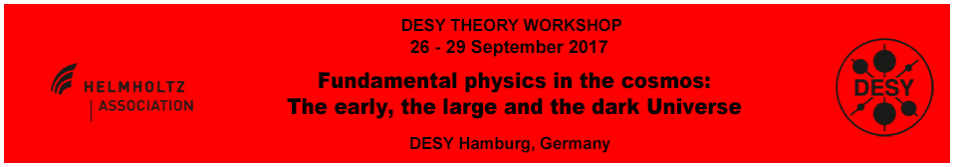

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Charged Composite Scalar Dark Matter

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We consider a composite model where both the Higgs and a complex scalar χ, which is the Dark Matter (DM) candidate, arise as light pseudo Nambu-Goldstone bosons (pNGBs) from a strongly coupled sector with TeV scale confinement. The global symmetry structure is SO(7)/SO(6), and
the DM is charged under an exact U(1) DM $\subset$ SO(6) that ensures its stability. Depending on whether the χ shift symmetry is respected or broken by the coupling of the top quark to the strong sector, the DM can be much lighter than the Higgs or have a weak-scale mass. Here we focus primarily on the latter possibility. We introduce the lowest-lying composite resonances and impose calculability of the scalar potential via generalized Weinberg Sum Rules. Compared to previous analyses of pNGB DM, the computation of the relic density is improved by fully accounting for the effects of the fermionic top partners. This plays a crucial role in relaxing the tension with the current DM direct detection constraints. The spectrum of resonances contains exotic top partners charged under the U(1) DM , whose LHC phenomenology is analyzed. We identify a region of parameters with f = 1.4 TeV and 200 GeV < mχ < 400 GeV that satisfies all existing bounds. This DM candidate will be tested by XENON1T in the near future.

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