Abstract Submitted
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Baryogenesis and Dark Matter from Freeze-In[1] BRIAN SHUVE, Harvey Mudd College, DAVID TUCKER-SMITH, Williams College — We propose a model in which the baryon asymmetry and dark matter are created via the decays and inverse decays of QCD-charged scalars, at least one of which must be in the TeV mass range. Singlet fermions produced in their decays constitute the dark matter. The singlets never reach equilibrium, and their coherent production, propagation, and annihilation generates a baryon asymmetry. We find that that the out-of-equilibrium condition and the dark matter density constraint typically require the lightest scalar to be long-lived, giving good prospects for detection or exclusion in current and upcoming colliders. In generalizing the leptogenesis mechanism of Akhmedov, Rubakov and Smirnov, our model expands the phenomenological possibilities for low-scale baryogenesis.

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