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Asymmetric Dark Matter and Baryons from Dark Phase Transitions

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We present several models of asymmetric dark matter (ADM) and baryons coming from dark phase transitions and unique complementary signals. One achieves both baryogenesis and ADM in a minimal “mirror” sector, while another adds (heavy) ADM to any standard baryogenesis scenario. Yet another uses the most minimal dark sector to achieve baryogenesis alone. Thanks to the necessity of the vector and neutrino portals, discoverable signals include nuclear/electron recoils in direct detection experiments, visibly decaying dark photons, exotic Higgs and Z decays, extra relativistic degrees of freedom, and gravitational waves from the dark phase transition.

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