Freeze-in is a general and calculable mechanism for dark matter production in the early universe. Assuming a standard cosmological history, such a framework predicts metastable particles with a lifetime generically too long to observe their decays at colliders. In this talk, I will consider alternative cosmologies with an early matter dominated epoch, and I will show how the observed abundance of dark matter is reproduced only for shorter lifetimes of the metastable particles. Famous realization for such a cosmology are moduli decays in SUSY theories and inflationary reheating. Remarkably, for a large region of the parameter space the decay lengths are in the displaced vertex range and they can be observable at present and future colliders. I will conclude with an example of DFSZ SUSY theories where this framework is realized.