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Brandon Melcher (Syracuse): Concentrated Dark Matter: Enhanced Small-scale Structure from Co-Decaying Dark Matter.

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We study the cosmological consequences of co-decaying dark matter - a recently proposed mechanism for depleting the density of dark matter through the decay of nearly degenerate particles. A generic prediction of this framework is an early dark matter dominated phase in the history of the universe, that results in the enhanced growth of dark matter perturbations on small scales. We compute the duration of the early matter dominated phase and show that the perturbations are robust against washout from free-streaming. The enhanced small scale structure is expected to survive today in the form of compact micro-halos and can lead to significant boost factors for indirect detection experiments, such as FERMI, where dark matter would appear as point sources.

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