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Dark matter, gravitational waves, and primordial black holes from domain-wall annihilation

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The symmetry breaking of a scalar particle (axion-like particle) in the early Universe produces a rich cosmology. In this cosmology, different patches of the Universe with different energies are separated by a network of domain walls. When the Universe cools, the domain walls annihilate as the lowest-energy patches become dominant. The annihilation process ("catastrogenesis") produces axion-like particles, gravitational waves, and possibly primordial black holes. Depending on the properties of the model, the axion-like particles or primordial black holes could constitute the dark matter, and the gravitational waves could be visible in present or future detectors. (Based on arXiv:2303.14107, arXiv: 2307.07665, and forthcoming work.)

Mini Symposia (Invited Talks Only)

Plenary (Invited talks only)

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