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Simulating dark matter subhalos

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Many astrophysical probes of dark matter (strong lensing, perturbations to stellar streams, abundances and structure of dwarf galaxies) are sensitive to the number and properties of dark matter subhalos. Accurate inference from observations requires reliable and versatile models of subhalo populations. I will describe our latest generation of subhalo population models, which provide fast and accurate populations that can be used in forward modeling approaches. Key new features include support for a wide range of dark matter phenomenology (include SIDM, and decaying models), updated tidal evolution physics, and machine learning emulation for even faster model generation.

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