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Generative Adversarial Network for Identifying the Dark Matter Distribution of a Dwarf Spheroidal Galaxy

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We introduce a generative adversarial network for analyzing the dark matter distribution of a dwarf spheroidal galaxy.
The mock data generator for dwarf spheroidal galaxies in the spherically symmetric case has three functional parameters: the number density of stars, the density of dark matter, and velocity anisotropy.
The generator will be adversarially trained on a mock dataset, which contains only the line-of-sight information, to identify the dataset's unknown dark matter distribution under given velocity anisotropy.
We will explain how we implement specialized classifiers, generators cooperating with the spherical Jeans equation, and regularizers to avoid less physical solutions.

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