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Numerical Simulations of Dwarf Galaxies in Differing Environments WILLIAM DINWIDDIE, JACQUELINE DUNN, Midwestern State University — Through the use of N-body simulations, the effects of gravitational interactions on the evolution of dwarf irregular galaxies are explored. Numerous studies have been performed on N-body simulations of dwarf galaxies, with most focused on modeling the tidal interactions of satellite and host galaxies. This project also focuses on the interaction of two dwarf galaxies. Here, two general scenarios are considered: the interaction of two dwarf galaxies, and a single dwarf galaxy nearby a large spiral galaxy, much similar to our own Milky Way. Initial conditions for each galaxy model were produced using GalactICS, with N-body simulations being run through GADGET 2. Within each general case, various combinations of initial galaxy position and velocity are considered. Each dwarf-dwarf galaxy scenario is repeated with a dwarf galaxy and a large spiral galaxy. The most drastic changes are seen under low velocity interactions. Additionally, each scenario is run within the presence of a larger galaxy cluster. The cluster is modeled by the addition of a representative potential within the GADGET 2 code. The results of the simulations imply that global environment (group/cluster membership) has more impact on dwarf galaxy evolution compared to local environment (nearby neighbor).

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