Chemodynamics of Dwarf Galaxies under Ram-pressure

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Abstract

By implementing a dynamic wind-tunnel model in a smoothed-particle chemodynamic/hydrodynamic simulation suite, we have investigated the effects of ram pressure and tidal forces on dwarf galaxies similar to the Magellanic Clouds, within host galaxies with gas and dark matter halos that are varied to compare the relative effects of tides and ram pressure. We concentrate on how the distributions of metals are affected by interactions. We find that while ram pressure and tidal forces have some effect on dwarf galaxy outflows, these effects do not produce large differences in the metal distributions of the dwarf disks, and that for our chosen orbit, confinement from the host galaxy gas halo appears to be more significant than ram pressure stripping. We find that stochastic variations in the star formation rate can explain the remaining variations in disk metal properties. This raises questions on the source and effectiveness of quenching in dwarf galaxies.

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