

The Influence of Ram Pressure on the Evolution of Tidal Dwarf Galaxies

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The formation mechanism of tidal dwarf galaxies means they are expected to contain little or no dark matter. As such, they might be expected to be very sensitive to their environment. We investigate the impact of ram pressure on tidal dwarf galaxies in a parameter study, varying dwarf galaxy properties and ram pressures. We submit model tidal dwarf galaxies to wind-tunnel style tests using a toy ram pressure model. The effects of ram pressure are found to be substantial, and not only the gas is affected. By stripping the gas, the potential well surrounding the stars is heavily reduced, resulting in unbinding of stars too. If tidal dwarf galaxies have their gas totally stripped, they may be entirely destroyed. We investigate the effects of ram pressure on surface density profiles, and the dynamics of the stars. The presence of unbound stars down our line-of-sight can result in dynamical masses as much as a factor of ~ 10 in excess of the real mass.