

R34a Tidally driven features in galactic interactions

Alex Pettitt (Hokkaido University), Elizabeth Tasker (JAXA), James Wadsley (McMaster University), Clare Dobbs (University of Exeter), Ben Keller (McMaster University) and Sam Benincasa (McMaster University)

Disc galaxies seen in the night sky show a wide variety of different arm and bar features. Many galaxies are believed to be influenced by passages of neighbouring galaxies, dwarfs and dark matter subhalos, which impose a gravitational tidal force on the galaxy. I present ongoing work into the impact of such interactions on the structure of galaxies using numerical simulations of the stars and gas in numerous different galaxy models. Properties investigated are the lifetime and shape of spiral arms, how bars are driven or subdued, and how the gas in the galaxy is affected by such features. We find spirals can be driven easily in interactions, with varying shapes and longevities. Bar structures have a less uniform response, with some interactions driving or delaying bar formation in a given galaxy. Tidal spirals show clear spatial offsets between star formation regions and the spiral arm potential well, with star formation rates differing between each arm. Such features can act as observational diagnostics of the origin of spiral structure in observed galaxies.