[구GC-15] Disk Galaxy Warp Formation via Close Encounters

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We present our N-body simulation study on the disk galaxy warp formation via close encounters. Using a publicly available code Gadget2, we investigate morphological and kinematical structures of disk galaxies while the galaxies are undergoing fly-by encounters with adjacent dark matter halos. In this study, we find that warps can be excited by impulsive encounters and sustained for a few billion years. Most of the warps from the simulation show inclination angles that are comparable to the observations. The creation of warps, their inclination and their lifetimes are governed primarily by the following three parameters: the impact parameter (the minimum distance between two halos), the mass ratio between two galaxies, and the incoming angle of the intruder. We discuss pros and cons about our alternative scenario in comparison with existing explanations.

[구GC-16] SPH models of the interactions in Stephan's Quintet

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We present smoothed particle hydrodynamic models of the interactions in the compact galaxy group, Stephan's Quintet. Adding thermohydrodynamic effects to the earlier collisionless N-body simulations of Renaud et al. (2010), we further investigate the dynamical interaction history and evolution of the intergalactic gas of Stephan's Quintet. Specifically, we model the formation of the hot X-ray gas, the group-wide shock, and emission line gas as the result of NGC 7318b colliding with the group as well as reproduce the tidal structures in the group. We compare our model results to multi-wavelength observations.