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We use smoothed particle hydrodynamics (SPH) models to study the evolution of galactic spin and the distribution of gas and young stars in the inner region of the galaxies through galaxy encounters. Specifically, we perform numerical simulations of interactions of a late- or an early-type galaxy with either a late- or an early-type galaxy with and without a gas halo at the closest approach distances of 25 and 50 kpc. We find that an early-type galaxy encountering a late-type galaxy have a higher galactic spin and more gas and young stars in the central region of the galaxy after the collision. We are analyzing the role of a gas halo on the changes of galactic spin and central mass distribution during various galaxy-galaxy encounters.

[포GC-19] The impact of ram pressure on the multi-phase ISM probed by the TIGRESS simulation

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Galaxies in the cluster environment interact with the intracluster medium (ICM), losing the interstellar medium (ISM) and alternating their evolution. Observational evidences of the extraplanar ISM stripped by the ICM's ram pressure are prevalent in HI imaging studies of cluster galaxies. However, current theoretical understanding of the ram pressure stripping (or ICM-ISM interaction in general) is still limited mainly due to the lack of numerical resolution at ISM scales in large-scale simulations. Especially, self-consistent modeling of the turbulent, multiphase ISM is critical to understand star formation in galaxies interacting with the ICM. To achieve this goal, we utilize the TIGRESS simulation suite, simulating a local patch of galactic disks with high resolution to resolve key physical processes in the ISM, including cooling/heating, self-gravity, MHD, star formation, and supernova feedback. We then expose the ISM disk to ICM flows and investigate the evolution of star formation rate and the properties of the ISM. By exploring ICM parameter space, we discuss an implication of the simple ram pressure stripping condition (so called the Gunn-Gott condition) to the realistic ISM.

우주론 / 암흑물질,암흑에너지

[포GC-20] Testing Gravity with Cosmic Shear Data from the Deep Lens Survey

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From the gaussian, near scale-invariant density perturbations observed in the CMB to the late time clustering of galaxies, CDM provides a minimal theoretical explanation for a variety of cosmological data. However accepting this explanation, requires that we include within our cosmic ontology a vacuum energy that is ~122 orders of magnitude lower than QM predictions, or alternatively a new scalar field (dark energy) that has negative pressure.

Alternatively, modifications to Einstein's General Relativity have been proposed as a model for cosmic acceleration. Recently there have been many works attempting to test for modified gravity using the large scale clustering of galaxies, ISW, cluster abundance, RSD, 21cm observations, and weak lensing.

In this work, we compare various modified gravity models using cosmic shear data from the Deep Lens Survey as well as data from CMB, SNe Ia, and BAO. We use the Bayesian Evidence to quantify the comparison robustly, which naturally penalizes complex models with weak data support. In this poster we present our methodology and preliminary constraints on f(R) gravity.

[포GC-21] The Dependence of Type Ia Supernova Luminosities on the Global and Local Properties of Host Galaxies in the YONSEI Supernova Catalog

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Trends of Type Ia supernova (SN Ia) luminosities with the properties of host galaxies are important to study the underlying physics for an SN progenitor system and explosion mechanism. In the YONSEI SN catalog, we have a sample of ~600 SN and host data in the wider redshift range, and two independent light-curve models, SALT2 and MLCS2k2. From this catalog, here we present that SNe Ia in low-mass, globally and locally star-forming environments are fainter than those in high-mass, globally and locally passive