## [Ⅵ-1-3] Origin of Dark-Energy and Accelerating Universe

Yong-Yeon Keum
*Department of Physics, University of Korea*

After SNIa and WMAP observations during the last decade, the discovery of the accelerated expansion of the universe is a major challenge to particle physics and cosmology. There are currently three candidates for the dark energy which results in this accelerated expansion:

• a non-zero cosmological constant,
• a dynamical cosmological constant (quintessence scalar field),
• modifications of Einstein's theory of gravity.

The scalar field model like quintessence is a simple model with time-dependent w, which is generally larger than −w1. Because the different w lead to a different expansion history of the universe, the geometrical measurements of cosmic expansion through observations of SNIa, CMB and baryon acoustic oscillations (BAO) can give us tight constraints on w. One of the interesting ways to study the scalar field dark-energy models is to investigate the coupling between the dark energy and the other matter fields. In fact, a number of models which realize the interaction between dark energy and dark matter, or even visible matter, have been proposed so far. Observations of the effects of these interactions will offer an unique opportunity to detect a cosmological scalar field. In this talk, after briefly reviewing the main idea of the three possible candidates for dark energy and their cosmological phenomena, we discuss the interactinng dark-energy model, paying particular attention to the interacting mechanism between dark energy with a hot dark matter (neutrinos). In this so-called mass-varying neutrino (MVN) model, we calculate explicitly the cosmic microwave background (CMB) radiation and large-scale structure (LSS) within cosmological perturbation theory. The evolution of the mass of neutrinos is determined by the quintessence scalar field, which is responsible for the cosmic acceleration today.

## [Ⅵ-1-4] Nonlinear evolution of the relativistic Weibel instability driven by anisotropic temperature

Helen H. Kaang and Chang-Mo
*Department of Physics, POSTECH*

The relativistic Weibel instability has drawn attention as a main mechanism of the magnetic generation in the core of galaxies or in the formation of universe. The Weibel instability is not yet fully understood in the relativistic region. We investigated nonlinear saturation and decay of the relativistic Weibel instability. It is found that the early phase of the instability is in excellent agreement with the linear theory. But, an analysis based on an alternative magnetic trapping saturation theory reveals that a substantial discrepancy between the theory and simulation is revealed in the relativistic regime in contrast to an excellent agreement in the non-relativistic regime. The analysis of the Weibel instability beyond the quasilinear saturation stage shows an inverse cascade process via a nonlinear decay instability involving electrostatic fluctuation.

■ Session : 은하
10월 30일(금) 17:15 – 19:00 제1발표장

## [(초)Ⅶ-1-1] Satellite Overquenching Problem

Sukyoung Yi[1], and Taysun Kimm[2]
[1]*Department of Astronomy, Yonsei University, Korea*
[2]*Sub-Department of Astrophysics, University of Oxford, United Kingdom*

We have investigated the recent star formation history of the nearby galaxies using the SDSS optical and Galex UV data. To everyone's surprise, we found that roughly 30 percent of elliptical galaxies had a residual star formation in the last billion years, suggesting that residual star formation has been common even in ellipticals. Galaxy evolution models based on semi-analytic prescriptions including AGN feedback reasonably reproduce the star formation properties of elliptical galaxies. However, we found that the current galaxy models miserably fail to reproduce the star formation properties of satellite disc galaxies in cluster environments. Satellite disc galaxies in models are overly star-formation quenched in comparison to observation. Detailed investigations led us to conclude that this is due to the use of inaccurate prescriptions for the gas content evolution in the model. I present a solution to the problem by adopting more realistic physical prescriptions.

## [Ⅶ-1-2] Demography of SDSS Early-type galaxies from the perspective of radial color gradients

Hyewon Suh[1], Hyunjin Jeong[1], Kyuseok Oh[1], Sukyoung K. Yi[1], Ignacio Ferreras[2], and Kevin Schawinski[3]
[1]*Department of Astronomy, Yonsei University, Korea*
[2]*Mullard Space Science Laboratory, University College London, UK*
[3]*Yale Center for Astronomy and Astrophysics, Yale University, U.S.A*

We have studied the radial g-r color gradients of early-type