

# 구두발표초록

## 초청강연

### [초 IT-01] Overview of Astrophysical Turbulence

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천문학적 유체는 대부분 자기장을 가지고 있으며 난류 상태에 있다고 믿어진다. 본 발표에서는 다양한 환경에서 존재하는 자기유체역학적(MHD) 난류를 소개하고자 한다. 첫째, 가장 간단한 경우로 비압축성 유체에서 발생하는 MHD 난류를 살펴보고자 한다. 이 경우, 평균자기장의 세기가 약한 경우와 강한 경우로 나누어 볼 수가 있는데, 평균자기장의 세기가 아주 약한 경우 난류에 의한 자기장의 증폭 현상이 특히 중요하다. 평균자기장의 세기가 강한 경우는 난류의 스펙트럼과 구조가 큰 관심사가 되고 있다. 둘째, 작은 스케일 난류와 초음속 압축성 난류를 간단히 소개하고자 한다. 작은 스케일(이온의 자이로 반경 부근) 난류는 아직 연구가 미진한 분야 중 하나이고 초음속 압축성 난류는 해석적 연구가 어렵기 때문에 연구의 많은 부분을 수치계산에 의존하고 있다. 마지막으로, MHD 난류에 대한 지식이 어떻게 관측에 응용될 수 있는지 간단한 예를 들고자 한다.

### [초 IT-02] Subaru Strategy for 2020's

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Subaru Telescope, NAOJ

Strategic plan of Subaru science and operation will be introduced. Currently, Subaru has wide variety of instruments, conducts only classical observations, with less than 5 nights allocation for each proposal. Near future, Subaru will emphasize on surveys, introduce queue mode observations, reduce the number of instruments, and concentrate on large size programs. Large surveys are called Subaru Strategic Programs (SSPs). HSC-SSP is on-going (300 nights for 5 years), PFS-SSP will start at around 2020 (360 nights for 5 years), and IRD-SSP from 2016 (TBD). HSC science includes 1) cosmology with gravitational lensing, 2) lensing studies of galaxies and clusters, 3) photometric redshifts, 4) the Solar system, 5) the Milky Way and the Local Group, 6) AGN/quasars, 7) transients, 8) galaxies at low/high redshifts, and 9) clusters of galaxies. PFS science includes 1) cosmology, 2) galaxy & AGN, and 3) galactic archaeology. Subaru is planning the third pillar

instrument, so called ULTIMATE-Subaru, which is the GLAO optical-NIR wide field camera & multi-IFU spectrograph for finding galaxies at ultra high redshift ( $z > 10$ ). Finally the strategy from Subaru to TMT will be presented. Subaru will conduct four major SSPs (HSC, PFS, IRD, ULTIMATE-Subaru) in coming decade to provide targets to TMT. HSC performs wide field surveys to reveal the distribution of dark matter in the Universe. IRD surveys Earth-like young planets to discover ~20 Earth-like habitable planets. PFS studies the expanding Universe to provide a few million emission line galaxies to TMT.

### [초 IT-03] The Development of the East Asian Observatory

Paul Ho  
EAO/JCMT director

The East Asian Observatory (EAO) was established in 2014 by the East Asian Core Observatories Association (EACOA). The goal of the EAO is to build and operate world-class facilities on behalf of the East Asian regions, as a counterpart to the European Southern Observatory (ESO). Leading astronomical facilities such as ALMA, TMT, GMT, and SKA are mega projects which require enormous economic resources. It is difficult for any observatory or any country to fund such facilities on its own. EAO intends to combine the resources and manpower in our East Asian regions, in order to play a leading role in the next generation frontier instruments. The EACOA institutes: NAOC, NAOJ, KASI, and ASIAA, have authorized the EAO to take on the operations of the James Clerk Maxwell Telescope (JCMT) on Mauna Kea as their first joint venture. In this talk, we will report on the development of EAO, our current operations of JCMT, and our future aspirations.

### [초 IT-04] Exoplanet Science and Cosmology with the GMT-Consortium Large Earth Finder (G-CLEF)

Andrew Szentgyorgyi for the G-CLEF Collaboration  
Harvard Smithsonian Harvard-Smithsonian Center for Astrophysics, PI of G-CLEF

The GMT-Consortium Large Earth Finder (G-CLEF) is an optical band echelle spectrograph that has been selected as the first light instrument for the Giant Magellan Telescope (GMT). G-CLEF is