spectroscopic observations were understood via spectroscopic measurements on nuclei, atoms, and molecules. Recently, computational astrophysics plays a role of bridging experimental data to observations, in particular via numerical modeling of complex astronomical phenomena. This presentation focuses on computational nuclear astrophysics that connects experimental data on nuclei to high-energy observation data obtained by X-ray and gamma-ray telescopes. As an example case, X-ray burst will be discussed. In this phenomenon, observed X-ray light curves and spectra can be modeled by stellar evolution calculations that take nuclear reactions of rare isotopes as input information. This presentation also works as an introduction to the following presentation that will provide more detailed discussion on the experimental aspect of X-ray burst.

[초 LA-04] Understanding Explosive Stellar Events Using Rare Isotope Beams

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Nuclear reactions in explosive stars such as novae, X-ray bursts, and supernovae are responsible for producing many of the elements that make up our world. Exotic nuclei not normally found on earth can play an important role in these events due to the extreme conditions that occur in the explosion. A frontier area of research involves utilizing beams of radioactive nuclei to improve our understanding of these explosions and the implications on cosmic element production. At the future radioactive ion beam facility of Korea, RAON, we will measure astrophysically important reactions using exotic beams to probe the details of cosmic events. Details of RAON and possible day-1 experiments at the facility will be presented.

TOWARD NEXT GENERATION CORONAGRAPH

[구 TG-01] TOWARD NEXT GENERATION SOLAR CORONAGRAPH: DEVELOPMENT OF COMPACT DIAGNOSTIC CORONAGRAPH ON ISS

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The Korea Astronomy and Space Science Institute plans to develop a coronagraph in collaboration with National Aeronautics and Space Administrative (NASA) and install it on the International Space Station (ISS). The coronagraph is an externally occulted one stage coronagraph with a field of view from 2.5 to 15 solar radii. The observation wavelength is approximately 400 nm where strong Fraunhofer absorption lines from the photosphere are scattered by coronal electrons. Photometric filter observation around this band enables the estimation of 2D electron temperature and electron velocity distribution in the corona. Together with the high time cadence (< 12 min) of corona images to determine the geometric and kinematic parameters of coronal mass ejections, the coronagraph will yield the spatial distribution of electron density by measuring the polarized brightness. For the purpose of technical demonstration, we intend to observe the total solar eclipse in 2017 August for the filter system and to perform a stratospheric balloon experiment in 2019 for the engineering model of the coronagraph. The coronagraph is planned to be installed on the ISS in 2021 for addressing a number of questions (e.g. coronal heating and solar wind acceleration) that are both fundamental and practically important in the physics of the solar corona and of the heliosphere.

[구 TG-02] Development of DIagnostic Coronagraph Experiment (DICE) for Total Solar Eclipse

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Korea Astronomy and Space Science Institute (KASI) is developing a coronagraph in collaboration with National Aeronautics and Space