[포AT-07] Pulsar observation with KVN

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Radio pulsars are highly magnetized, rapidly rotating neutron stars that emit synchrotron radiation along the magnetic axes at their spin frequencies. Traditionally, pulsar observations have been done at low frequencies (MHz up to a few GHz), since radio pulsar spectrum is known to a power-law with a steep negative spectral index. More recently, high-frequency pulsar observations (several GHz and above) have been made as a broadband spectrometer and fast computers became available. High-frequency pulsar observations will provide information on radio emission mechanism of pulsars in the vicinity of the neutron star surface. There is also huge interest from gravitational-wave and astrophysics community to find a pulsar in the center of our Galaxy. The Korean VLBI Network has three 21-m single dishes in the Korean peninsula. Using KVN's lowest observational frequency of 22-GHz, we performed test observations with the KVN targeting a few selected known, bright pulsars. In addition, we have been developing pulsar pipelines that can be utilized with a VLBI facility using Mark-V. We present a brief introduction of radio pulsars and show data obtained with the KVN.

[포AT-08] IGRINS First Light Instrumental Performance

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The Immersion Grating Infrared Spectrometer (IGRINS) is an unprecedentedly minimized infrared cross-dispersed echelle spectrograph with a high-resolution and high-sensitivity optical performance. A silicon immersion grating features the instrument for the first time in this field. IGRINS will cover the entire portion of the wavelength range between 1.45 and 2.45μm accessible from the ground in a single exposure with spectral resolution of 40,000. Individual volume phase holographic (VPH) gratings serve as cross-dispersing elements for separate spectrograph arms covering the H and K bands. On the 2.7m Harlan J. Smith telescope at the McDonald Observatory, the slit size is 1″ x 15″. IGRINS has a 0.27″ pixel-1 plate scale on a 2048 x 2048 pixel Teledyne Scientific & Imaging HAWAII-2RG detector with SIDECAR ASIC cryogenic controller. The instrument includes four subsystems; a calibration unit, an input relay optics module, a slit-viewing camera, and nearly identical H and K spectrograph modules. The use of a silicon immersion grating and a compact white pupil design allows the spectrograph collimated beam size to be 25mm, which permits the entire cryogenic system to be contained in a moderately sized rectangular vacuum chamber. The fabrication and assembly of the optical and mechanical hardware components were completed in 2013. In this presentation, we describe the major design characteristics of the instrument and the early performance estimated from the first light commissioning at the McDonald Observatory.