

**[XIGR-01] High Mass X-ray Binary and IGOS with IGRINS**

Moo-Young Chun<sup>1</sup>, Dae-Sik Moon<sup>2</sup>, Ueejeong Jeong<sup>1</sup>, Young Sam Yu<sup>1</sup>  
and IGRINSteam

<sup>1</sup>*Korea Astronomy and Space Science Institute, <sup>2</sup>Dept. of Astronomy and  
Astrophysics, Univ. of Toronto*

The mass measurement of neutron stars or black holes is of fundamental importance in our understanding of the evolution of massive stars and core-collapse supernova explosions as well as some exotic physics of the extreme conditions. Despite the importance, however, it's very difficult to measure mass of these objects directly. One way to do this, if they are in binary systems, to measure their binary motions (i.e., Doppler shifts) which can give us direct information on their mass.

Recently many new highly-obscured massive X-ray binaries have been discovered by new hard X-ray satellites such as INTEGRAL and NuSTAR. The new highly-obscured massive X-ray binaries are faint in the optical, but bright in the infrared with many emission lines. Based on the near-infrared spectroscopy, one can first understand the nature of stellar companions to the compact objects, determining its spectral types and luminosity classes as well as mass losses and conditions of (potential) circumstellar material. Next, spectroscopic monitoring of these objects can be used to estimate the mass of compact objects via measuring the Doppler shifts of the lines. For the former, broad-band spectroscopy is essential; for the latter, high-resolution spectroscopy is critical. Therefore, IGRINS appears to be an ideal instrument to study them. An IGRINS survey of these new highly-obscured massive X-ray binaries can give us a rare opportunity to carry out population analyses for understanding the evolution of massive binary systems and formation of compact objects and their mass ranges.

In this talk, we will present a sample near-infrared high resolution spectra of HMXB, IGR J19140+0951 and discuss about its spectral feature. These spectra are obtained on 13th July, 2014 from IGRINS commissioning run at McDonald 2.7m telescope. And at final, we will introduce the upgrade plan of IGRINS Operation Software (IGOS), to gather the input from IGRINS observer.