[포IM-06] Simultaneous Surveys of 22 GHz Water and 44 / 95 GHz Class I Methanol Masers toward High-Mass Protostellar Objects.

Chang-Hee Kim[1,2] ,Kee-Tae Kim[1] Young-Sun Park[2]
[1]*Korea Astronomy and Space Science Institute, Hwaam-Dong, Yuseong-Gu, Daejeon 305-348, Korea,* [2]*Korea Astronomy and Space Science Institute, Hwaam-Dong, Yuseong-Gu, Daejeon 305-348, Korea*

We made simultaneous surveys of 22 GHz water and 44 / 95 GHz methanol masers toward 299 high-mass protostellar objects using the Korea VLBI Network (KVN) 21-m telescope. The sources were selected from the catalog of Red MSX Source (RMS) survey. Initial selection of the sample present high-mass protostellar objects in an evolutionary phase prior to ultra-compact HII regions , which have bolometric luminosities > 10^3 $L_\odot$ but are not associated with any radio continuum emission. After the follow-up work of ongoing RMS survey, final samples contains 56 sources classified as HII regions. We performed a simultaneous survey of 22 GHz water and 44 GHz methanol masers in 2011 and then conducted a simultaneous survey of 22 GHz water and 44 / 95 GHz methanol masers in 2012. The primary scientific goals of these surveys are to investigate the relationship among the three masers and to explore the relationship between each maser and the central star or the parental dense core. The detection rates of two epochs are 42% and 38% for water, 25% and 26% for 44 GHz methanol, and 23% (2012 only) for 95 GHz methanol masers. We performed a statistical analysis on subsample associated with a large data found in literature. In this poster, we will the preliminary data analysis results and discuss the implications.

[포IM-07] High Resolution Optical Spectra of HBC 722

Sunkyung Park[1], Jeong-Eun Lee[1], Wonseok Kang[2], Hyun-Il Sung[3], Sang-Gak Lee[2], Joel D. Green[4], and William D. Cochran[4]
[1]*School of Space Research, Kyung Hee University*
[2]*National Youth Space Center*
[3]*Korea Astronomy and Space Science Institute*
[4]*Department of Astronomy, University of Texas at Austin*

We present the results of high resolution (R>35,000) optical spectroscopic monitoring observations of a new FU Orionis-like young stellar object, HBC 722. We observed HBC 722 with the Bohyunsan Optical Echelle Spectrograph (BOES) and Hobby-Eberly Telescope (HET) since November 26, 2010. HBC 722 is the FU Orionis-like object best characterized for the pre-outburst phase, and it provides the first opportunity to profile the burst phase of accretion across all wavelengths. We detected a number of lines such as Hα, Hβ, Fe II λ 5018, Mg I λ 5183, Na I D doublets, and metallic photospheric lines. In this work, we focus on the time variations of those spectral lines to understand the accretion process of HBC 722.