

[S6-3] **Next Generation Fabrication Methodology for 2m Class Hexagonal Segment Mirrors for Extremely Large Telescopes**

Dae Wook, Kim¹, Sug-Whan, Kim¹

¹*Space Optics Laboratory, Department of Astronomy, Yonsei University*

The Extremely Large Telescopes(ELTs), such as OWL and EURO50, requires new fabrication techniques for 2m class hexagonal mirror segments of demanding specifications. We report a new fabrication methodology using precessing bulged tooling. Theoretical tool influence functions(TIFs) were derived based on the Preston's material removal equation. This theoretical TIFs were verified with the experimental TIFs investigated elsewhere. These verified TIFs were used to control the material removal in a predictable manner. During simulated polishing, the process control algorithm, partly aided by an experimental artificial intelligence, alters polishing parameters including tool pressure, rotation speed, tool path, and so on. The initial simulation experiment yielded the p-v form accuracy of better than 1/10 wave and the rms accuracy of around 1/30 wave. The computational details as wells as the implications to the ELT fabrication are presented.

* Key-words : Hexagonal segments, Tool influence function, PrecessionsTM process

[S6-4] **22 GHz Millimeter Observations of Water Maser Source W75N, Quasar BL Lac and Microquasar Cyg X-3 with VERA and J-NET**

Soon-Wook Kim^{1,2}, Jeong-Sook Kim^{3,4}, Tetsuo Sasao^{3,5}, Mareki Honma^{6,7},
Makoto Inoue^{6,7}, Tomoharu Kurayama^{6,7}

¹*Chungnam National University, ²ARCSEC, Sejong University,*

³*Korea Astronomy Observatory, ⁴Kyunghee University, ⁵Aju University,*

⁶*National Astronomy Observatory of Japan, ⁷Tokyo University*

On May 23UT 2004 we observed a microquasar Cygnus X-3 together with starforming-regions in W75N and BL Lac, using VLBI Exploration of Radio Astrometry (VERA), Nobeyama 45m and Kashima 34m at 22 GHz. Cygnus X-3 was in its lowest X-ray state during the observation, but we detected a brief, ~10 minutes episode of flickering above the detection limit. BL Lac was measured with the snap-shot mode with 2.2 Jy at 22GHz without any appreciable flux variability.

In W75N we detected a bright maser and a few more spots. The spot search is on progress in the region, for example, VLA1 (or W75N(Ba)) and VLA2.