

V131a Large Submillimeter Telescope (LST): 3) Surface Error Budget and Wind Effect

R. Kawabe (NAOJ), K. Kohno, B. Hatsukade (UTokyo), Y. Tamura, K. Tachihara (Nagoya U), T. Oshima, S. Ishii, J. Inatani, M. Honma, T. Kamazaki, Y. Asaki, M. Saito, T. Minamidani (NAOJ), T. Takekoshi, T. Sakai (UEC) K. Sorai (Hokkaido U), M. Momose (Ibaraki U), N. Kuno (Tsukuba U), S. Yamamoto, T. Totani (UTokyo), T. Kitayama (Toho U), K. Hattori (Nippon Tech) M. Kurita, M. Kino (Kyoto U) T. Onishi, H. Ogawa, H. Maezawa (Osaka Pref. U), R. Furuya (Ehime U), H. Nakanishi (Kagoshima U), E. Komatsu (MPI), and LST Working Group

We report on the recent progress on a plan to construct a 50m class millimeter and submillimeter single dish telescope, the Large Submillimeter Telescope (LST), especially the technical study of tentative surface error budget and wind-load effect. The telescope is optimized for wide-area imaging and spectroscopic surveys in the 70 to 420 GHz frequency range, which just covers main atmospheric windows at millimeter and submillimeter wavelengths for good observing sites such as the ALMA site in Chile. We also target observations at higher frequencies of up to 1 THz, using an inner part high-precision surface. Active surface control is required in order to correct gravitational and thermal deformations of the surface. One of major technical challenges is correction for the wind-load deformation, which requires measurements and feedback in much shorter time scale than the gravitational and thermal deformations. We investigated the surface error budget of the LST quantitatively, together with wind statistics at the ALMA site such as wind speed and direction. Other recent progress will be also presented.