

[10-03] **JEM-EUSO Space Mission for the Measurement of Ultra High-energy Cosmic Rays**

남신우, 정애라, 정태신, 박재형, 박일홍, 김지은, 나고운, 오세지, 정수민  
*이화여자대학교*

For high-statistics measurement of ultra high-energy cosmic rays with the extensive air-showers, a space telescope with a wide field-of-view provides a promising tools as the whole earth atmosphere is used as a detector. As a new type of space observatory that is being constructed by the international collaboration, JEM-EUSO (Extreme Universe Space Observatory on Japanese Experiment Module) has been selected for a candidate mission to be installed in JEM at the International Space Station (ISS). The instrument of the telescope has 2.5 m diameter double Fresnel lenses optics, the focal plane detector with 300,000 pixels, and the readout electronics. The effective aperture is larger than that of Pierre Auger Observatory by a factor of 56 - 280 depending on the design conditions. Two-year-long Phase-A/B study has started. The status of the project is presented.

---

[10-04] **Results from the Integration test of the MEMS Space Telescope for Observation of Transient Luminous Event**

나고운<sup>1</sup>, 김지은<sup>1</sup>, 남신우<sup>1</sup>, 문경화<sup>1</sup>, 박일홍<sup>1</sup>, 박재형<sup>1</sup>, 양종만<sup>1</sup>, 오세지<sup>1</sup>, 이직<sup>1</sup>, 전진아<sup>1</sup>, 정수민<sup>1</sup>, 정애라<sup>1</sup>, 정태신<sup>1</sup>, Artikova Sayara<sup>1</sup>, 김용권<sup>2</sup>, 김민수<sup>2</sup>, 박용선<sup>3</sup>, 유병욱<sup>2</sup>, 유형준<sup>3</sup>, 진주영<sup>2</sup>, P. Klimov<sup>4</sup>, G. Garipov<sup>4</sup>, B. Khrenov<sup>4</sup>,

<sup>1</sup>이화여자대학교, 물리학과, <sup>2</sup>서울대학교, 전기컴퓨터공학부, <sup>3</sup>서울대학교, 물리천문학부,

<sup>4</sup>DV Skobeltsyn Institute of Nuclear Physics, Moscow State University

For the measurement of extensive air shower of ultra high-energy cosmic rays with the energy above  $10^{19}$  eV, it is necessary to understand the extreme lightning phenomena in upper atmosphere called TLE (Transient Luminous Event). MEMS Telescope for Extreme Lightning (MTEL) is a space telescope designed for the measurement of TLEs by using an array of micro mirrors constructed with the Micro Electro Mechanical System (MEMS) technology. Korea Astronaut MEMS space TELEscope (KAMTEL) is used to test the design concept of MTEL. It is selected as one of the experiments to be performed by the Korean astronaut at the International Space Station. For the measurement of UV light, telescope using the MEMS mirror (T2) will be installed in the KAMTEL. The optical part of T2 will search for and zoom in the TLE events with a wide field of view.

The first MEMS Space Telescope with a micro mirror array is under the construction. Results from the integration tests of the KAMTEL will be presented with the mechanical design of the payload.