EUV observation for Earth's plasmasphere from EML2 by nano-spacecraft

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The nano-spacecraft (6U) mission named EQUULEUS will be launched in 2020 as one of the sub-payloads of NASA's Space Launch System. EQUULEUS will fly to a liberation orbit around the Earth-Moon L2 point and demonstrate trajectory control techniques within the Sun-Earth-Moon region for the first time as a nano-spacecraft. A small telescope for extreme ultraviolet (EUV) named PHOENIX will be boarded on the spacecraft. It consists of multilayer-coated mirror (diameter of 6 cm with Mo/Si coating), metallic thin filter, and photon counting device with microchannel plate and resistive anode. The reflectance of the mirror and transmittance of the filter are optimized for the emission line of ionic helium (wavelength of 30.4 nm) which is the important component of the plasmasphere of the Earth. By flying far from the Earth, the entire image of plasmasphere can be obtained. In this presentation, the mission concept and the design of the telescope, and the status of the latest development will be shown.