EUV imaging for Earth's plasmasphere by nano-spacecraft named EQUULEUS

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The nano-spacecraft mission named EQUULEUS is now under development. It will be launched in 2019 as one of the payloads of SLS (Space Launch System) mission of NASA. EQUULEUS will fly to a libration 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 in extreme ultraviolet named PHOENIX will be boarded on EQUULEUS. It consists of multilayer-coated entrance mirror (diameter of 6 cm) and photon counting device (microchannel plate and resistive anode), and electronics parts. The reflectance of mirror is 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 latest development status are shown.

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