

Next space solar observatory SOLAR-C: mission instruments and science objectives

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SOLAR-C, the fourth space solar mission in Japan, is under study with a launch target of fiscal year 2018. A key concept of the mission is to view the photosphere, chromosphere, and corona as one system coupled by magnetic fields along with resolving the size scale of fundamental physical processes connecting these atmospheric layers. It is especially important to study magnetic structure in the chromosphere as an interface layer between the photosphere and the corona. The SOLAR-C satellite is equipped with three telescopes, the Solar UV-Visible-IR Telescope (SUVIT), the EUV/FUV High Throughput Spectroscopic Telescope (EUVS/LEMUR), and the X-ray Imaging Telescope (XIT). Observations with SUVIT of photospheric and chromospheric magnetic fields make it possible to infer three dimensional magnetic structure extending from the photosphere to the chromosphere and corona. This helps to identify magnetic structures causing magnetic reconnection, and clarify how waves are propagated, reflected, and dissipated. Phenomena indicative of or byproducts of magnetic reconnection, such as flows and shocks, are to be captured by SUVIT and by spectroscopic observations using EUVS/LEMUR, while XIT observes rapid changes in temperature distribution of plasma heated by shock waves.