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Ion Analyzer Experiment in Near-Moon Space Environment Exploration

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Abstract: Solar wind-moon interaction is a very interesting topics. Solar wind passes non-magnet astronomical body, like moon, and forms wake structure at the downstream of the moon. IMF would be enhanced in wake structures. An ion analyzer (SWID) mounted on the spacecraft of Changáre-1 which has been launched in Oct. 24, 2007 to measure the ion flux, energy and angular distributions in the wake structure of the moon to understand the physical mechanism of the solar wind and moon interaction in the near moon space environment. This low energy ion analyzer , called Solar wind ion detector , designed with solar wind velocity range is 100á“2000km/s;energy range is between 0.05á“20 keV and dynamic range is about 105-1010čłcm² sr secčł⁻¹ . It could derive the solar wind velocity, proton temperature, and ion density. Three missions would operate around moon during the period from 2007, Sept. to 2009, Apr., that is Selene from Japan, Changáre, from China and Chandrayaan-1, from India, multi-point measurements around moon would be the great opportunity for the mankind to pursue the deep investigation of lunar space environment. The huge coordination between the missions is urgently needed to get more scientific return from the multi-point measurement around the moon. Till now, the instrument on Changáre-1 has given some good result to provide the information of ion distribution in near-moon space environment.