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Solar Particle Monitoring system onboard UNITEC-1 small satellite along Hohmann orbit to Venus

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Energetic solar particles released from the sun during flares or CME (Coronal Mass Ejection) events are coming through the Earth orbit within several hours. Energetic particles are not only harmful for astronaut activities on orbit but also affective for malfunctions of satellite. Solar energetic particles are observed by, for example, GOES satellite on stationary orbit as a few tens MeV to 1 GeV charged particles (mainly protons).
It has been monitored and archived long time on Earth orbit, however, the Earth is only a point in heliosphere, so that, monitoring such particles at any other point on interplanetary space is significant for the flare/CME studies.
Previously, during 1998-2004, the solar particle monitor (SPM) on-board NOZOMI spacecraft to Mars was monitoring the solar energetic particles. In cases of flare/CME events, more than 3 orders increasing of counted particles were frequently recorded with continuing in a few days.
As a piggy-back satellite of the Planet-C, Japanese Venus explorer to be launched in 2010, a small -size university satellite UNITEC-1 is in development by 20 participants of the UNISEC (UNIversity Space Engineering Consortium), expecting to be injected to the Hohmann orbit to Venus by H-IIA rocket. Testing of deep space communication to small-size satellite as well as a survival competition of commercial-use on-board computers are planned for the UNITEC-1. In order to obtain any scientific results from the small testing satellite of UNITEC-1, we will install SPM (Solar Particle Monitor), an energetic particle counter. Even in a severe limitation of communication line from the small-size satellite in deep space (limit at 6,000,000 km from the Earth, in expectation), based on optimum on-board processing for the expected events, we will monitor the energetic solar particles as far as possible. In this paper, observation plan by the UNITEC-1/SPM and its development status will be shown.

Keywords: SEP, Interplanetary, HEP, radiation monitor