
[EE] Evening Poster | P (Space and Planetary Sciences) | P-CG Complex & General

[P-CG21]Future missions and instrumentation for space and planetary science

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Not only national space agencies but some universities and even companies in the world are now leading a number of space science and exploration missions and also energetically initiating new research activities for satellite and rocket developments and international collaborations in these days because the Earth observations from the space and the space explorations could be achieved much easier than a few decades ago. The deployment to the space, which itself is not purely a scientific purpose but one of methods for better sciences, is vigorously motivating the technical innovation and the educational development. For successful space missions, it is also crucial to research and develop aim-oriented on-board instruments, and the fundamental research and development of observational instrumentation with future perspectives could totally lead space missions in some case. Detailed investigation and evaluation on various on-board instruments are needed during their proposals, selections, and fabrications in order to promote the missions, and inevitably we have to make multi-sided arrangements and evolution at every process and aspect of any type of space missions, independently of their mission sizes. In this session, we focus on these comprehensive research activities in the space missions, including the mission integrations and the individual instrumental developments, and we also call many presentations showing the uniqueness and renovation regarding the mission strategy and methodology, and the status and latest results in the related state-of-the-art researches and developments, which would provide all of researchers and developers with invaluable opportunities for active discussion, information sharing, and collaboration toward the realization of more missions for more fruitful space sciences and explorations in nearer future.

[PCG21-P03]A combined flexible and programmable single channel receiver system for interferometer applications.

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A high-performance low power advanced digital TV tuner recently have advanced natural phenomena exploration for decades. The combination of TV tuner with digital demodulator can be realized into a flexible and programmable planetary atmospheric phenomena monitoring system such as USB dongle single channel receiver. This instrument is capable of responding to a wide enough radio wave signal (e.g. 52 – 2200 MHz) and generate 8-bit digital data output. This instrument has also been tested from laboratory measurement on Doppler shift response and is now being developed in the construction of a multi-channel receiver system in order to support interferometer observation technique this year. Through this paper, we report on the development of a multi-channel receiver system that can be implemented in an interferometer observation technique. This designed and developed system could be expected to be used for early study of phenomena in the Earth atmosphere using RF signals. In addition, the initial test results of multi-channel system from laboratory measurements using modified open source radio software for receiver function are also shown and discussed in this paper.