

R009-25

Zoom meeting D : 11/2 AM1 (9:00-10:30)

9:30~9:45

Development of an engineering model (EM) of the Mass spectrum Analyzer (MSA) for Mars Moons eXploration (MMX)

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The Mass Spectrum Analyzer (MSA) will conduct in-situ observations of ions and magnetic fields around Phobos as part of the Martian Moons eXploration (MMX) mission, in which remote-sensing and in-situ measurements and sample return will be performed. The MMX project has two primary science goals: 1) Reveal the origin of Martian moons and 2) Understand physical processes in the Martian environment for investigating co-evolution of the Martian-moons system. The MSA instrument is composed of an ion energy mass spectrometer, two magnetometers, and electronics. The ion analyzer measures distribution functions and mass distributions of low-energy ($< \sim 10$ eV) ions. The magnetometers measure the magnetic field of the solar wind which is sometimes perturbed by Mars and possibly by Phobos. The combination of ion and magnetic field sensors will allow us to measure ions emitted from Phobos and its torus as well as escaping ions from the Martian atmosphere with monitoring the solar wind to address the MMX science goals.

The MSA is now being developed from previous instruments for space plasma missions such as Kaguya, Arase, and Bepi-Colombo/Mio to contribute to the MMX scientific objectives. The preliminary design review (PDR) was completed last fall and we have started the development of the engineering model (EM) since then. We present the results of the EM design and performance tests to show the current status of the development.