

## P24 Estimation of minimum detectable polarization for X-Calibur balloon-borne experiment.

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“X-ray polarization measurement is a powerful tool for investigating the geometric and magnetic structure of compact stars. However, there are few observations of X-ray polarization because of the difficulty of developing the accurate X-ray polarimeter.

We are now jointly developing the novel hard X-ray (15-40 keV) polarimeter X-Calibur with Washington University in St. Louis.

X-Calibur is a balloon-borne Compton-based polarimeter with high-sensitivity by attaching the X-ray telescope and launched from McMurdo (Antarctic) in Dec. 2018. We can observe the X-ray polarization by detecting the photons that undergo Compton scattering in a beryllium with a subsequent photoelectric absorption in a CZT detector.

At the flight in 2018, we are planning to observe the high mass X-ray binary Vela X-1 and will investigate the radiation direction of X-ray for the magnetic field.

We are also planning to launch the upgraded X-Calibur in 2021 by using the X-ray telescope that originally developed by Japan for the FFAST mission.

The detection efficiency is expected to be improved up to a factor of 10 by this upgrade. The IXPE satellite that observes the soft X-ray (2-8keV) image with polarization is planned for launch in 2021 and we will observe the same object in the same time.

In our poster, we present estimation of the improvement of minimum detectable polarization for X-Calibur 2018 to 2021 flight.”

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**Session Classification:** Poster Short Presentations