

validate the prediction of the FEM for high frequency jitter analysis due to reaction wheel. The principle is to measure structural transfer functions between the input disturbances at RWA base plate and the accelerations near the end tips of payload, in a configuration close to the operational model. The spacecraft shall have to be suspended, in order to be representative of on-orbit boundary conditions. The results of the test shall be compared to the output of the FEM analysis, and if needed, local upgrades of the FEM and/or margin policy shall be defined in order to guarantee a good test/FEM consistency. Test results were compared with the transfer functions of the FEM, which is globally tuned based on the results of vibration test and consequently have lower damping coefficients values than 1% in the frequency range of 60~200Hz. The damping coefficients estimated from the figures of FRF test results are different from the theoretical FEM, but the magnitude trend of FRF of the test results is somewhat similar with the analytical, it is expected that the overall jitter effect of final estimation is nearly same with the preliminary analysis result in which the damping coefficients were assumed to be 1% for all modes in FEM.

#### [IV-2-4] Simple and Flexible Temperature Control System for Space Environment Test

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The temperature control system which is using liquid and gaseous nitrogen has been known as the most economical system to simulate space temperature condition due to relatively not expensive price of the liquid nitrogen (less than 0.2 USD per liter). And, among these systems, the closed loop system which circulates compressed nitrogen gas come from sprayed liquid nitrogen by blower and makes a target temperature with heat from an electrical heater and flow rate of liquid nitrogen is prevail all over the world. But, this complete closed loop system requires expensive equipments such as blower, heater, and liquid nitrogen injector, and special maintenance on the system. Therefore, KARI is developing efficient and simple open loop system which utilizes liquid and gaseous nitrogen with eliminating a special blower and other expensive units. In this study, this open loop system with more efficiency and flexibility will be designed and introduced.

■ Session V-1 : Astronomy & Cosmology 2  
Thursday, 23 October [10:00-11:15]

#### [V-1-1] A Photometric Study of the W UMa-type Contact Binary GX Aurigae

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The CCD photometric observations of the W UMa type contact binary GX Aur were performed for 33 nights from 2004 to 2008 using a 2K CCD camera and Johnson BVRI filter system attached to the 61cm reflector at Sobaeksan Optical Astronomy Observatory (SOAO). From our observations, the first BVRI light curves of GX Aur were completed and eight new times of minima (primary: 4, secondary: 4) were obtained. All the times of minima including our timings were collected and analyzed to see the dynamical behavior of GX Aur system. Intensive analysis of our BVRI lightcurves with the recent Wilson-Devinney binary model shows that GX Aur is an over-contact binary whose component stars have equal mass and time-variable spots.

#### [V-1-2] Period study of 1RXS J062518.2+733433 from the X-ray and optical data

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1RXS J062518.2+733433. The X-ray data was obtained in April 6, 2006 with the XMM-Newton and the optical data with CCD R filter at the 1m telescope of the Lemonsan observatory in 2005-2006 for 11 nights. This source is classified as a magnetic cataclysmic variable with a spin period of 1187.3 s in the optical region. We determine the spin period to be  $1187.26 \pm 0.11$  s using the X-ray data, which is well consistent with the optical studies. However, we find that the pulse profile of the data (0.2-10 keV) folded at the period is different from the quasi-sinusoidal optical profile and is dependent on the selected X-ray energy bands. The results of period searching with times of extrema will be also presented.

#### [V-1-3] Neutron Capture Elements in Metal-poor Giants

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