[ID-13] Ultra Fast Flash Observatory to observe the prompt photons from Gamma Ray Bursts

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UFFO (Ultra Fast Flash Observatory) is an ultra-fast optical/UV telescope which can slew to targets within 1 msec using MEMS (Micro-Electro-Mechanical Systems) micromirrors. It is utilized for observations of prompt optical/UV photons from GRBs (Gamma Ray Bursts), permitting the first ever systematic study of optical/UV emission far earlier than 1 sec after trigger. Topics of interest include short vs. long GRB prompt emission, which may have different emission time scales and mechanisms, and potential prompt emission from otherwise "dark" GRBs. We describe a concept and optical designs of the UFFO, and report lap-test results using a prototype telescope

[ID-14] Development of a Correlation Tracker System for New Solar Telescope: Software

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New Solar Telescope (NST), which will be the largest solar telescope in the world, is under construction by New Jersey Institute of Technology (NJIT), University of Hawaii (UH), and Korea Astronomy and Space Science Institute (KASI). There will be active optics (aO) and adaptive optics (AO) in order to improve image quality, and a Correlation Tracker (CT) system which is the simplest form of AO will be applied to Nasmyth focus bench. Especially in this presentation, we will introduce the CT software and its computing performance. The software has been developed via Microsoft Visual C++. The software enables us to take images from the high-speed CMOS camera, to calculate those displacements between the images by using sum of absolute differences (SAD) algorithm, and to control the tip-tilt mirror. We adopted the parallel programming technology (SIMD and OpenMP) based on the Intel Core 2 Quad processor without any additional processing system (FPGA or DSP) for high-speed performance. As a result, we can successfully make a tip-tilt correction over 700 Hz with 64 × 64 pixels in a closed loop mode. The CT system will be installed on the NST in 2009.