

# Ultra wide-field telescope WIDGET for detecting optical transients

**T. Tamagawa** (1), Y. Urata (1), M. Tashiro (2), K. Abe (2), K. Onda (2), F. Usui (3), H. Azuma (4), M. Kuwahara (4) for the WIDGET collaboration

(1) RIKEN, (2) Saitama Univ., (3) ISAS/JAXA, (4) Tokyo Univ. of Science  
(tamagawa@riken.jp)

We present performance and recent results of an ultra widefield telescope WIDGET which consists of three large format (2k x 2k) electrically cooled CCD cameras (Apogee U10) and three wide-field lenses (Canon EOS 35mm F1.4). WIDGET is a fully robotic system for detecting and monitoring optical emission of gamma-ray bursts (GRBs) in a very early phase, even before the trigger onset. The field-of-view (FOV) of WIDGET is three times 44 x 44 degrees covering significant part of FOV of gamma-ray burst satellites, HETE-2 and Swift. We started unmanned operation in June 2004 at Akeno observatory (138d30m(E), 35D47m(N), 900m altitude, Japan) and keep monitoring the sky with limiting magnitudes of about  $V=10$  mag. at  $SN=3$  with repeat of 5 second exposure and 5 second readout. So far we carried out three coincident GRB observations with the satellites and set upper limit of optical emission on and before the triggers. We will also describe the other observations for detecting optical transients.