

# BART: an intelligent GRB and sky monitoring telescope (2000–2004)

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## 1. Introduction

BART is a 25cm Schmidt-Cassegrain telescope equipped with two wide field cameras. Its primary target is a prompt search for GRB optical transients, secondarily it provides photometric monitoring of optical counterparts of selected high-energy objects and sky patrolling.

## 2. Technical solution

BART is currently using the Losmandy Titan mount, 25cm Schmidt-Cassegrain telescope with FLI CM2 detector and BVRiz filters. The field of view of this instrument is  $28 \times 28$  arc minutes.

Wide field cameras are two 1:1.7 Meopta lenses as a wide field optics with SBIG ST8 cameras for field of view  $4.8^\circ \times 7.2^\circ$ . V filter limiting magnitude of such system is up to 15 on a 120s moonless exposure.

Every CCD camera has it's own computer for managing readouts. Master PC handles mount, roof control, GSM alert messaging, power handling (instrumentation power off in daytime) and various other things.

## 3. Software

BART is driven by RTS2 (Robotic Telescope System), a Linux-based observatory management system, supporting various CCD cameras, telescope mounts and other instrumentation. System uses POSTGRES database for storing most of relevant information about targets, performed observations and images. (Kubánek et al. 2003)

The direct output of RTS2 is a large database of FITS images with precise WCS astrometry. Additional photometric or object searching algorithms are available and used when appropriate.

## 4. Results

We have followed more than 10 GRB alerts from whose several limits were published in the GCN network. Of the



Fig. 1. BART with the wide-field cameras atop the 25 cm telescope.

most important were world-first reactions to GRB 020305 and GRB 020317 (Jelínek et al. 2004). Later BART also gave limits for GRB 030824, GRB 031111a, GRB 031111b and GRB 031218.

## 5. Internet

For more detailed information and observing database visit <http://lascaux.asu.cas.cz/>

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## References

- Kubánek, P., Jelínek, M., Nekola, M. et al. 2003, RTS2 – Remote Telescope System, 2<sup>nd</sup> version. In: *Santa Fe GRB Conference proc.*, in press
- Jelínek, M., Kubánek, P., Nekola, M., Hudec, R. GRB optical prompt follow-up with BART, In: *ASP Conference Series, Vol. 312, Rome 2004*