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GRB 130606A: VLT/X-shooter redshift confirmation

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FROM: Dong Xu at DARK/NBI <dong.dark@gmail.com>

D. Xu (DARK/NBI), D. Malesani (DARK/NBI), S. Schulze (PUC and MCSS), J. P. U. Fynbo (DARK/NBI), Valerio D'Elia (ASI-SDC, INAF OAR), P. Goldoni (APC/Univ. Paris 7 and SAp/CEA), O. Hartoog (Amsterdam), J. Hjorth (DARK/NBI), L. Kaper (Amsterdam), T. Kruehler (DARK/NBI), A. J. Levan (U. Warwick), B. Milvang-Jensen (DARK/NBI), N. R. Tanvir (U. Leicester), K. Wiersema (U. Leicester) report on behalf of the X-shooter GRB GTO collaboration:

We observed the optical afterglow of GRB 130606A (Ukwatta et al., GCN 14781; Jelinek et al., GCN 14782; Xu et al., GCN 14783) using the ESO VLT equipped with the X-shooter spectrograph. The observations started on 2013-06-07 at 04:09 UT (i.e., 7.08 hr after the burst). A total exposure of 6x600 s was obtained, covering the spectral range from ~3000 to ~21000 Å.

A continuum is detected redward of ~8410 Å in the VIS/NIR arms of the spectra, consistent with a Lyman alpha dropout at $z \sim 5.9$, while discrete transmission is present blueward down to ~6505 Å. In the spectra prominent absorption lines are detected, such as NV, C II, O I, Si IV, C IV, and Si II, all at a common redshift of $z = 5.913$, fully consistent with the measurements in Castro-Tirado et al. (GCN 14796) and Lunnan et al. (GCN 14798). We also identified at least two intervening absorbers at $z = 3.451$ and at $z = 2.310$ through Mg II and Fe II, respectively.

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