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GRB 130216A: possible radio counterpart is steady field source

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K.J.B. Grainge (U. of Manchester), R.P. Fender, T.D. Staley
(U. of Southampton), A. Rowlinson, R.A.M.J. Wijers (U. of Amsterdam)
report on behalf of a large collaboration:

"We have observed the Swift/BAT error circle of GRB 130216A (GCN 14229) at multiple epochs with the AMI Large Array and the Westerbork Synthesis Radio Telescope, at 15 and 4.8 GHz respectively. The radio source we reported in GCN 14234 was clearly detected at all epochs at this position: RA, Dec (J2000) = 04:31:34, +14:39:36 (+/- 2 arcsec). Our flux density measurements are given in the table below.

Epoch	Delta T	Freq.	Flux density
Feb 16.94-16.98	0.03 days	15 GHz	0.78 +/- 0.08 mJy
Feb 18.55-19.01	1.86 days	15 GHz	0.80 +/- 0.04 mJy
Feb 19.51-19.59	2.62 days	4.8 GHz	1.11 +/- 0.09 mJy
Feb 19.86-19.99	3.00 days	4.8 GHz	1.15 +/- 0.06 mJy
Feb 20.50-20.64	3.64 days	4.8 GHz	0.92 +/- 0.07 mJy
Feb 20.91-20.99	4.02 days	4.8 GHz	1.09 +/- 0.08 mJy

The source is constant in flux between our observing epochs and also within the 11-hour AMI observation. The spectral index between 4.8 and 15 GHz is -0.3. There is no significant polarization detected in the combined Westerbork data, with a 3-sigma upper limit of 15%.

From these observations we conclude that this source is not the counterpart of GRB 130216A, but possibly a radio galaxy or AGN. Based on the combined 9C and 10C Surveys of Radio Sources (see, e.g., Davies et al. 2011, MNRAS, 415, 2708), we estimate that the probability for a source as bright or brighter than the one we detect to occur by chance inside the Swift/BAT error circle is 2%.

We would like to thank the AMI and WSRT staff for scheduling and obtaining these observations."