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Signs of Blandford & Znajek mechanism in GRB afterglow lightcurves.

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According to Blandford & Znajek (1977), the spin energy of a rotating black hole can be extracted electromagnetically, should the hole be endowed with a magnetic field supported by electric currents in a surrounding disk. We argue that this can be the case for the central engines of GRBs and we show that the duration of the burst depends on the magnetic flux accumulated on the event horizon of the black hole. We show that in several GRBs the theoretical curve of black hole spin down follows closely the energy flux (lightcurve). As a result we estimate the magnetic field strength at the vicinity of the black hole. Thus, we conclude that these GRBs have outflows with ordered magnetic fields and we estimate the field strength throughout the jet.

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