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The problematic connection between gamma-ray bursts (GRBs) and ultra-high energy cosmic rays (UHECR)

The acceleration site for UHECR is still an open question despite extended research and GRBs are considered one of the most promising source candidates. Under the likely assumption that electrons are also accelerated at the UHECR acceleration site, synchrotron emission from these co-accelerated electrons is inevitable. We characterize this synchrotron emission and compare it to observed GRB spectra and find that for standard parameters, the synchrotron flux from these electrons would be much too luminous. This result challenges both high- and low-luminosity GRBs as accelerators of UHECR. A detailed discussion on
GRB 060218 as UHECR source is also presented.

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