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Acceleration and survival of ultrahigh-energy cosmic-ray nuclei in gamma-ray bursts and hypernovae[1] SOEBUR RAZZAQUE, U.S. Naval Research Laboratory, XIANG-YU WANG TEAM, PETER MESZAROS TEAM — Recent results from the Pierre Auger Observatory hint that ultrahigh-energy cosmic-rays above an EeV energy may be composed of heavy nuclei rather than nucleons. This naturally leads to the questions of their origin and acceleration at the astrophysical objects. Gamma-ray bursts and hypernovae have been proposed to be the sources of ultrahigh-energy cosmic-rays. We explore different physical conditions under which heavy nuclei may be accelerated and survive in the environment of these sources, and report our findings.

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