Giant pulses in pulsar radio emission

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Giant pulses (GPs) are short-term burst-like large increases of an intensity of individual pulses observed from pulsars. The peak intensities and energies of GPs greatly exceed the peak intensity and energy of the average pulse. GPs are the brightest radio signals in the sky among the known astronomical objects. This rare phenomenon was observed only in nine pulsars out of more than 1400 known ones. We present a review of this phenomenon, based on our detection of three new pulsars with GPs, PSR B0031–07, PSR B1112+50 and J1752+2359 (belonging to the first group of pulsars found to have GPs without a high magnetic field at the light cylinder), and the comparative analysis of the previously known sources of GPs, including the Crab pulsar B0531+21, the millisecond pulsars J0218+4322, B1821–24, J1823–3021, B1937+21 and PSR B1957+20, and the pulsar B0540–69 in the Large Magellanic Cloud.