Mysterious properties of giant radio pulses from neutron stars

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Giant pulses detected from the Crab pulsar, the most rapidly spinning millisecond pulsar B1937+21, and few others, are undoubtedly one of the most striking phenomena demonstrated by celestial sources. Not only huge peak flux density – up to hundreds kJy (!) – but also many other properties (such as an extremely short, nanosecond duration; 100% linear or circular polarization) are unique and have no adequate explanation at the moment. We present the results of our recent observations of Giant Pulses conducted in 2004–2005 in a broad wavelength range from decameter to centimeter. They reveal unusual features, indicating in particular the operation of some resonant processes in neutron star magnetospheres.