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Signature of strange star in SGR 0501+4516

A strange star is a hypothesized compact star that is dense enough to literally break down ordinary neutrons into their constituent quarks. Furthermore, the up and down quarks are squeezed into an even rarer sort of quark known as a strange quark, which explains the name strange star. Technically, up, down, and strange quarks make up the "strange" matter of a strange star. This mixture of sub-hadronic particles may be even more stable than a typical neutron star.

Magnetars are a type of rare neutron star with a magnetic field that is the most powerful in the universe, approximately a thousand times stronger than that of a typical neutron star and a quadrillion times stronger than that of Earth. As a spinning magnetar can progressively collapse into an even more dense form through glitches of inside vortices, which would be something akin to a strange star with the requisite mix of quarks. It would undoubtedly cause gamma-ray and X-ray outbursts in near-infrared (NIR) imaging of soft gamma repeater (SRG) highly magnetized neutron stars. We found SGR 0501+4516 is a magnetar renowned for its gamma-ray and X-ray bursts and is a candidate for a strange quark star.

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