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# research highlights

PULSARS

## Best in class

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Ultraluminous X-ray sources (ULXs) are mysterious because their luminosities are well above the Eddington limit for a compact object, defined by the balance of accretion rates and radiation forces. Are they the long-sought intermediate-mass black holes or rapidly spinning neutron stars (pulsars)? Two recently discovered ULXs are pulsars, radiating at one hundred times the Eddington luminosity for a neutron star of 1.4 solar masses. Gian Luca Israel and collaborators delved into archival data for more examples, finding another pulsar observed by the XMM-Newton satellite, and by NuSTAR, independently. Not only does this pulsar, NGC 5907 ULX, outshine the previous record holder by a factor of ten, it is also the farthest neutron star, at a distance of 50 million light-years.

The existence of ULXs suggests that our understanding of the accretion process of neutron stars is incomplete. Models currently assume a purely dipolar magnetic field. Israel *et al.* argue that not only would NGC 5907 ULX require a multipolar magnetic field but a strong one as well, of the order of $10^{14}$ gauss. Thus these neutron-star ULXs may be magnetars, with their strong magnetic fields distorting the inflow of material to keep accreting.

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