2000

2001

2013

?

PSR J1023+0038 is a neutron star spinning 592 times per second, orbited by a small Sun-like star. We think all such fast-spinning neutron stars were spun up by accreting material spiraling in from a companion. We have actually seen this system switch back and forth between a radio pulsar (left) and an X-ray bright system with a disc of accreting material (right). Right now, in fact, the system is in this mysterious accreting state. When the accretion switches off, will the neutron star have spun up, slowed down, or stayed the same?

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