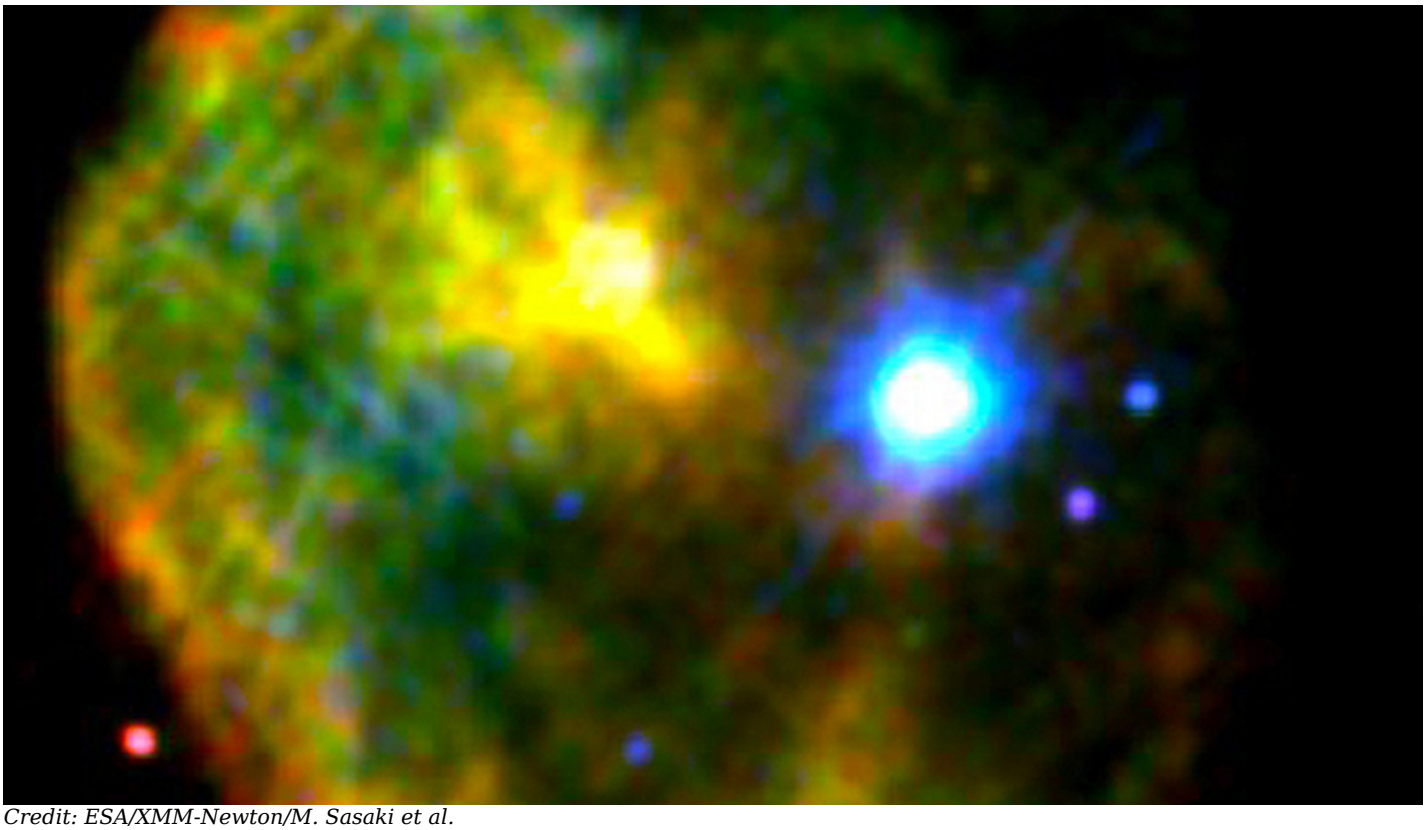

Credit: ESA/XMM-Newton/M. Sasaki et al.

The Anti-Glitch

A magnetar is a type of highly magnetized neutron star. Their extremely strong magnetic fields are produced in the fiery supernova that gave birth to the neutron star. Generally the spin periods of these objects gradually decrease with time. But sometimes these objects show a sudden increase, or "glitch", in their spin period. The cause of these rapid spin-ups is not well known, but is believed to be due to a sudden coupling between the rapidly spinning interior of the neutron star and the more slowly spinning surface. Recently, however, observations with NASA's Swift observatory have shown a phenomenon never before seen: a sudden slowdown in the spin period of a magnetar. This magnetar, called 1E 2259+586, can be seen in the XMM-Newton X-ray image above as the blue-white source embedded in a supernova remnant called CTB 109. This sudden slowdown is a puzzle to astronomers. Interestingly, a few weeks before the "anti-glitch", 1E 2259+586 produced a brief, intense X-ray burst which was observed by the Gamma-ray Burst Monitor aboard NASA's Fermi Gamma-ray Space Telescope. Perhaps this outburst signalled a sudden change in the neutron star's interior, leading to the rapid spindown. Whatever happened, astronomers note that since the anti-glitch, 1E 2259+586 spin has continued to slow down at a faster rate than before.
Published: June 3, 2013

< HEA Dictionary * Archive * Search HEAPOW * Other Languages * HEAPOW on Facebook * Download all Images * Education >

Each week the HEASARC brings you new, exciting and beautiful images from X-ray and Gamma ray astronomy. Check back each week and be sure to check out the HEAPOW archive!
Page Author: Dr. Michael F. Corcoran
Last modified Sunday, 02-Jun-2013 22:59:08 EDT

HEASARC Director: Dr. Alan Smale
HEASARC Associate Director: Dr. Roger Brissenden,
Responsible NASA Official: Phil Newman
Web Curator:Meredith Gibb

AdobeAcrobat
Privacy Policy and Important Notices.