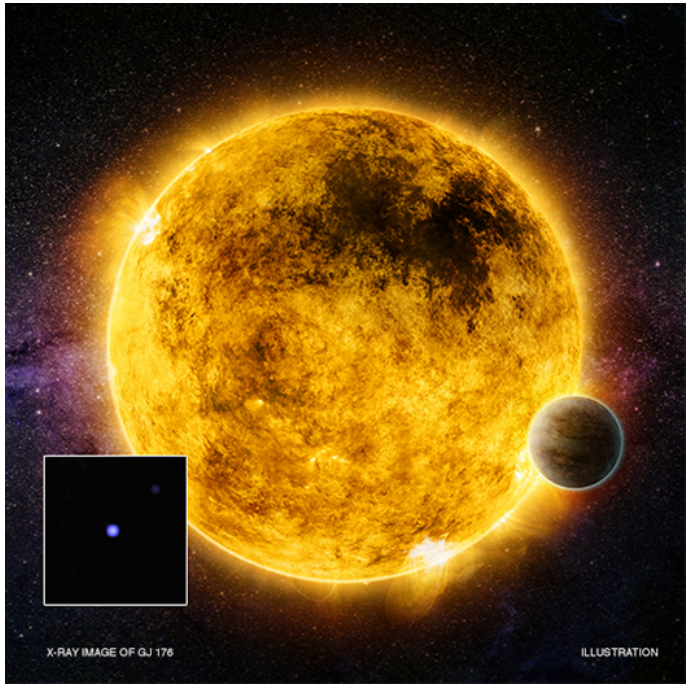
Chandra Science Highlight

X-ray Measurement of Decline of Stellar Magnetic Activity With Age



- A team of researchers used Chandra and XMM-Newton to observe 24 stars similar to the Sun, with ages ranging from 1.8 Gyr to 11 Gyr.
- X-rays were detected from 14 stars and upper limits were determined for 10 stars in the sample.
- The stellar X-ray luminosity normalized by the stellar surface area was found to decrease steeply with age with an exponent -2.80 +/- 0.72.
- X-ray emission from stars is closely linked to stellar magnetic activity such as flaring, so the decline of X-ray emission shows that the magnetic activity declines rapidly with age.
- The age-activity relation could have important consequences for understanding the effects of high-energy radiation on the habitability of planets around stars.

The artist's illustration depicts a Sun-like star with a planet in orbit around it. The inset box shows a Chandra image of GJ 176, one of the stars observed in a Chandra survey.

Distance estimate of GJ 176: 30.2 light years

Credit: X-ray: NASA/CXC/Queens Univ. of Belfast/ R.Booth, et al.; Illustration: NASA/CXC/M.Weiss.

Instrument: ACIS

Reference: Booth, R. et al., 2017, MNRAS, 471, 1012; arXiv:1706.08979

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