



Chandra Science Highlight

Orion Nebula: A Rich Cluster of Young Stars about 1,500 light years from Earth



Scale: X-ray image is 5.5 arcmin per side

- The young Sun-like stars in Orion produce violent X-ray outbursts, or flares, that are much more frequent and energetic than anything seen today from our Sun.
- The range of flare energies is large, with some of the stars producing flares that are a hundred times larger than others.
- The different flaring properties of the young Sun-like stars could have important implications for the formation of planets around these stars.
- According to some theoretical models, large flares could produce strong turbulence in a planet-forming disk around a young star.
- Such turbulence might affect the position of rocky, Earth-like planets as they form and prevent them from rapidly migrating towards the young star. Therefore, the survival chances of the Earth may have been enhanced by large flares from the young Sun.

(Credit: NASA/CXC/Penn State/E.Feigelson & K.Getman et al.)

This Chandra image was produced by observing the Orion Nebula almost continuously for 13 days. The long observation enabled scientists to study the X-ray behavior of young Sun-like stars with ages between 1 and 10 million years. The different colors for the stars in the image are primarily due to the differences in the amount of gas and dust along the line of sight, which filters out the lower energy X-rays.

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