

First coronal mass ejection from a star other than the sun observed

10 August 2018, by Bob Yirka



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A team of researchers led by Costanza Argiroffi, an astronomer at the University of Palermo in Italy, has found evidence of a coronal mass ejection (CME) from a star that was not our sun—the first ever observed. They reported their findings at this year's [Cool Stars 20](#) meeting in Massachusetts.

A [coronal mass ejection](#) occurs when a star spews a glob of plasma and charged particles from its corona into surrounding space. They quite often occur with our sun following a solar flare. In this new effort, the researchers found evidence of a CME from a large star (approximately three times the mass of the sun) called HR 9024—it is approximately 450 light-years from Earth.

The researchers reported that they were studying data from NASA's Chandra X-ray Observatory from a decade ago when they found what they claim is evidence of a CME. They further report that they were looking at changes in wavelengths of X-rays (Doppler shifts) emitted from the star to study material in the corona, when they noticed material that appeared to move away from the star after a flare had ceased. They reported that they detected the material moving back and forth in a loop extending out from the surface of the star and then back again. They also reported that the ejected

material was made up of approximately 1 billion trillion grams of material, which they note fell within predicted estimates. But they also found that the [kinetic energy](#) produced by the material as it escaped was a lot lower than had been predicted by theory. They also pointed out that prior research has suggested that material from a CME may not be able to escape a large star's strong magnetic field, which would explain why the material they observed was continually pulled back in the loop. They suggest this might also explain why CMEs for other [stars](#) have not been spotted before.

Other space scientists have suggested that the behavior the researchers observed might also serve as an indicator of the survivability of life on planets orbiting such a star. On the one hand, it could serve to protect such planets from being struck by material in a CME—but on the other, it could also mean that such planets would be subjected to more discharge if the energy not released by ejection of material results in more [solar flares](#).

More information: Julián D. Alvarado-Gómez et al. Suppression of Coronal Mass Ejections in Active Stars by an Overlying Large-scale Magnetic Field: A Numerical Study, *The Astrophysical Journal* (2018). [DOI: 10.3847/1538-4357/aacb7f](https://doi.org/10.3847/1538-4357/aacb7f)

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