James Clerk Maxwell Telescope discovers flare 10 billion times more powerful than those on the sun

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Credit: James Clerk Maxwell Telescope

The Hawaii-based James Clerk Maxwell Telescope (JCMT) has discovered a stellar flare 10 billion times more powerful than the Sun's

solar flares, a history-making discovery that could unlock decades-old questions about the origin of our own Sun and planets, giving insight into how these celestial bodies were born.

"A discovery of this magnitude could have only happened in Hawaii," said Dr. Steve Mairs, astronomer and lead investigator of the team that discovered the stellar flare. "Using the JCMT, we study the birth of nearby stars as a means of understanding the history of our very own solar system. Observing flares around the youngest stars is new territory and it is giving us key insights into the physical conditions of these systems. This is one of the ways we are working toward answering people's most enduring questions about space, time, and the universe that surrounds us."

The JCMT Transient Survey team recorded the 1,500-year-old flare using the telescope's state-of the art high-frequency radio technology and sophisticated image analysis techniques. Identified by astronomer Dr. Steve Mairs, the original data was obtained using the JCMT's supercooled camera known as "SCUBA-2," which is kept at a frigid -459.5 degrees Fahrenheit.

The flare is thought to be caused by a disruption in an intense magnetic field actively funneling material onto a young, growing star as it gains mass from its surroundings. The event occurred in one of the nearest star-forming regions to the Earth, the Orion Nebula. It lasted only a matter of hours.

Located near the summit of Maunakea, the JCMT is the largest and only telescope in the northern hemisphere capable of making this type of discovery. The stellar flare observation was made as part of a monthly tracking program from researchers from around the world who use the JCMT to observe nearly 1,000 nearby stars in the earliest stages of their formation.

More information: Steve Mairs et al. The JCMT Transient Survey: An Extraordinary Submillimeter Flare in the T Tauri Binary System JW 566, *The Astrophysical Journal* (2019). DOI: 10.3847/1538-4357/aaf3b1

Provided by James Clerk Maxwell Telescope