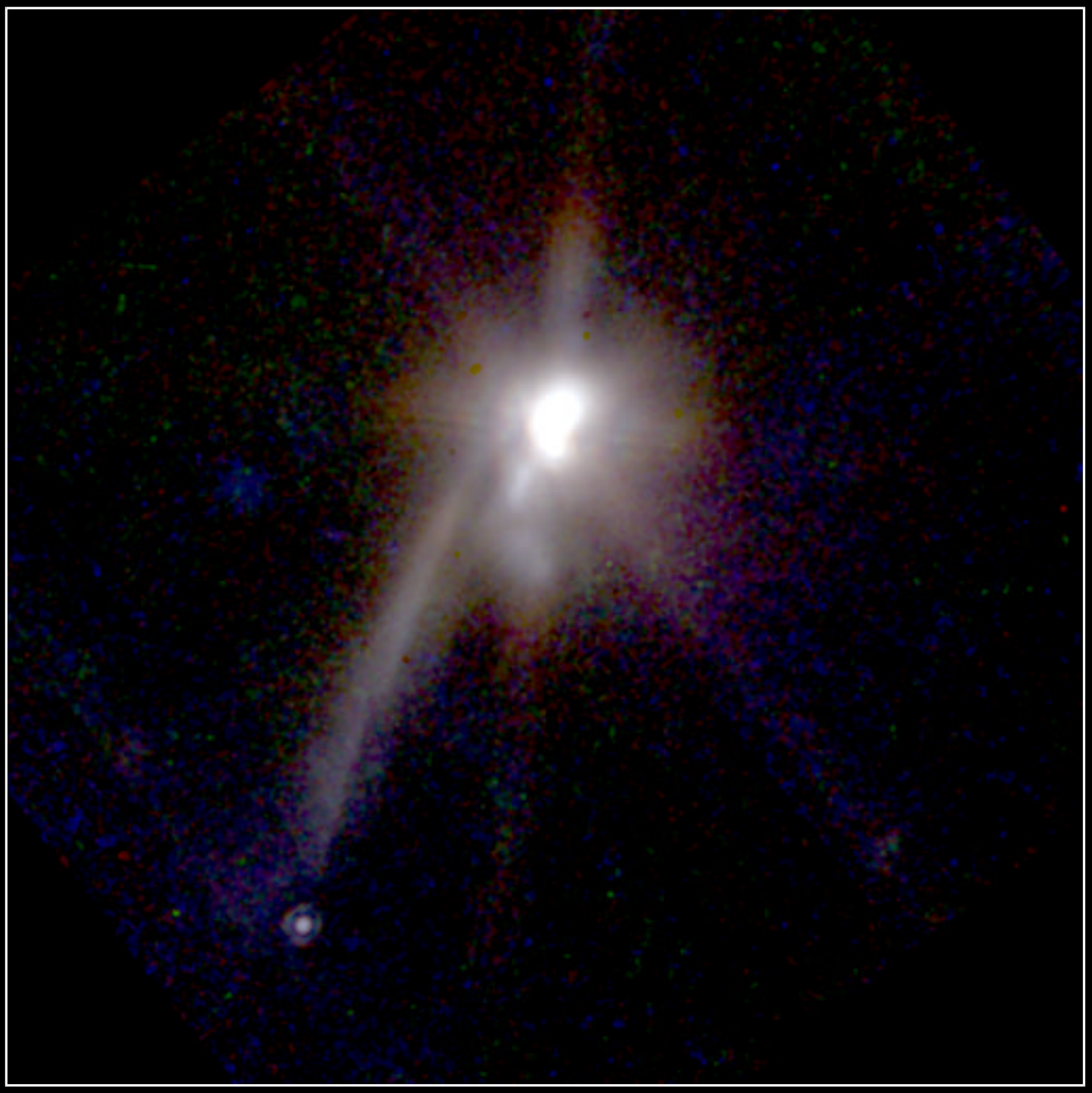

TMR-1C • Protoplanet in Taurus
Hubble Space Telescope • NICMOS

PRC98-19• ST ScI OPO • May 28, 1998 • S. Terebey (Extrasolar Research Corp.) and NASA

Hubble Space Telescope
NEWS

EMBARGOEDUNTIL: 1:00 PM (EDT) May 28, 1998
PHOTO NO.: STScI-PRC98-19

HUBBLE'S FIRST DIRECT LOOK AT POSSIBLE PLANET AROUND ANOTHER STAR

This NASA Hubble Telescope near-infrared image of newborn binary stars (image center) reveals a long thin nebula pointing toward a faint companion object (bottom left) which could be the first extrasolar planet to be imaged directly.

The brightest objects in the image are the binary protostars, which illuminate an extended cloud of gas and dust (image center) from which the stars formed. So much dust surrounds these protostars that they are virtually invisible at optical wavelengths. However, near-infrared light penetrates the overlying dust, revealing the newborn stars within. The faint multicolor cross extending from the neighborhood of the binary is an artifact produced when HST observes bright stars.

At lower left there is a point of light many times fainter than the binary. Theoretical calculations indicate that this companion is much too dim to be an ordinary star; instead, a hot young protoplanet several times the mass of Jupiter is consistent with the observed brightness. The candidate protoplanet appears at a distance of 130 billion miles from the binary (1400 times the Earth's distance from the Sun). A bright streak of nebulosity extends from the binary toward the faint companion, possibly indicating that the protoplanet was ejected from the binary system.

Current models predict that very young giant planets are still warm from gravitational contraction and formation processes, with temperatures as high as a few thousand degrees Fahrenheit. This makes them relatively bright in infrared light compared to old giant planets such as Jupiter. Even so, young planets are difficult to find in new solar systems because the glare of the central star drowns out their feeble glow. Young planets ejected from binary systems would therefore represent a unique opportunity to study extrasolar planets with current astronomical technology.

The image was taken on August 4, 1997 with the Near Infrared Camera and Multi-Object Spectrometer (NICMOS) in three wavelengths (1.6, 1.9, and 2.05 microns). The members of the research team include Susan Terebey (Extrasolar Research Corp.), Dave Van Buren, Deborah L. Padgett, Jet Propulsion Lab, Pasadena, CA (JPL), Terry Hancock (Extrasolar Research Corp.), and Michael Brundage, JPL.

Image Credit: Susan Terebey (Extrasolar Research Corp.), and NASA

FAST FACTS:

Star Name: TMR-1 (Taurus Molecular Ring, star 1 - binary)
Planet name: TMR-1C
Constellation: Taurus
Coordinates: $4^h39^m15^s$ RA, +25°53' Dec.
Distance: 450 light-years
Field of view: 19 arseconds

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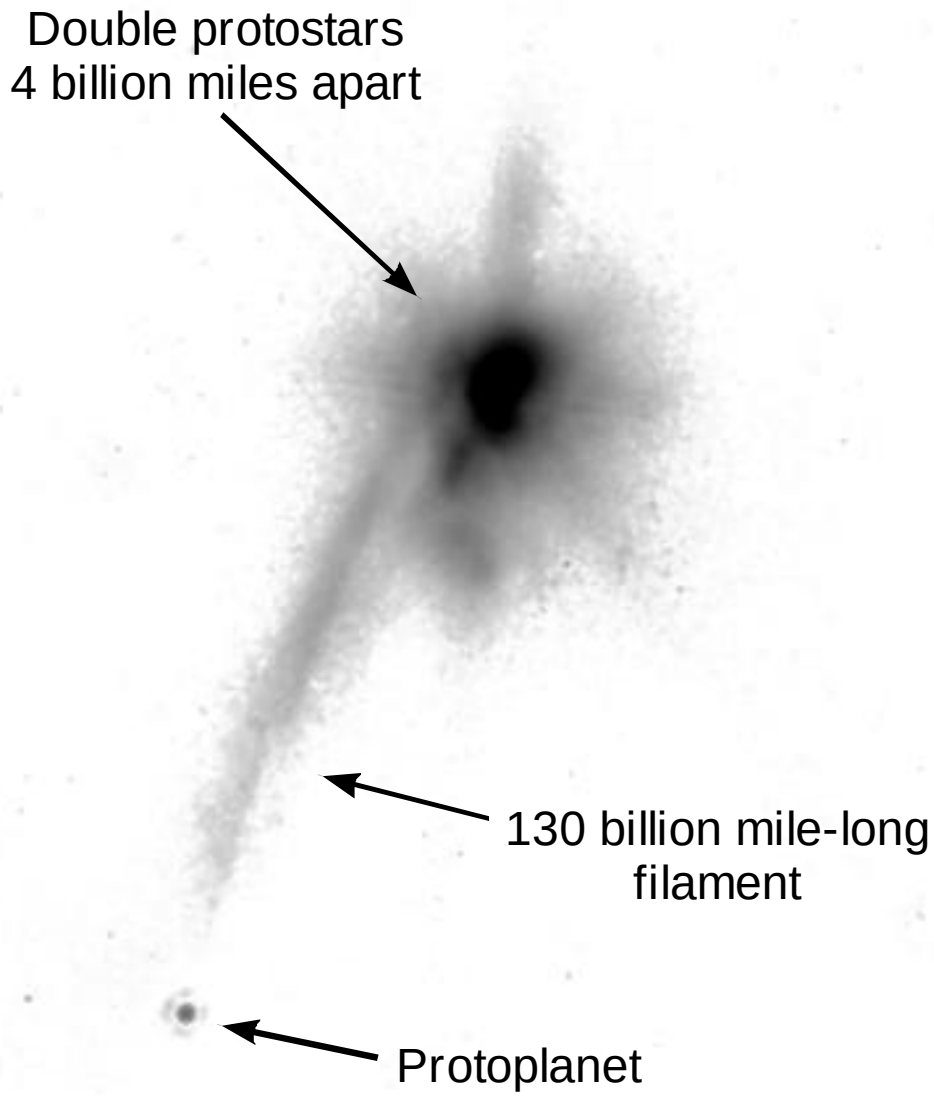
410-338-4707



TMR-1C
Hubble Space Telescope
NICMOS

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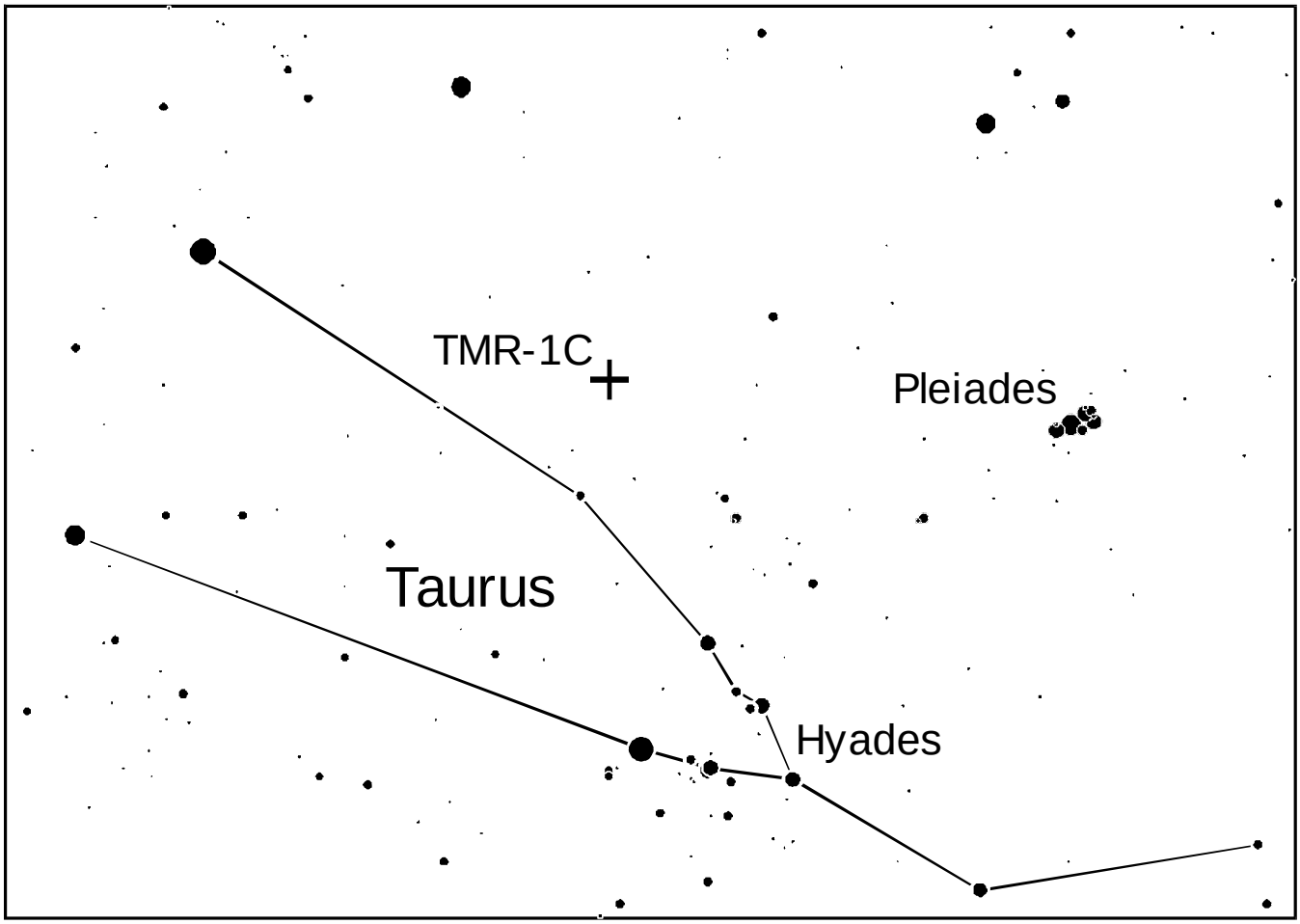
Location of Protoplanet TMR-1C on the Sky



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