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Submillimeter Study of the Halley-type Comet 12P/Pons-Brooks at Perihelion in April 2024 using the James Clerk Maxwell Telescope

使用 [詹姆斯·克拉克·麥克斯威爾望遠鏡] 對 2024 年 4 月位於近日點的哈雷型彗星 12P/龐士-布魯克斯 進行次毫米波的觀測研究

Abstract:

The Halley-type Comet 12P/Pons-Brooks is one of the brightest comets of our era and will pass perihelion at small solar elongation in April 2024. With a period of about 71 years, similar to comet Halley's ~76 years, our observing program will provide the only opportunity to observe a bright Halley-type comet in the foreseeable future. Because Comet 12P/Pons-Brooks will become a daytime object during perihelion, the circumstances are observationally prohibitive for most optical/infrared and mm/submm observing facilities worldwide except for a few, including the James Clerk Maxwell Telescope (JCMT) and the Atacama Large Millimeter/submillimeter Array (ALMA). Therefore, our planned observations in submillimeter are critical for our understanding of Halley-type comets, of which we have a rather limited knowledge base. Comet 12P/Pons-Brooks has a history of outbursts, so we will use the JCMT single-dish telescope to monitor its time-variability at a high cadence, which is essential and coincident with our ALMA interferometric study for high angular-resolution spectral imaging of the comet.