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Gas infall via accretion disk feeding Cepheus A HW2

Tuesday 6 May 2025 11:20 (20 minutes)

Located at the edge of the Cepheus Bubble, the massive star-forming region Cepheus A hosts HW2, a very young star growing more than dozen times the mass of our Sun - and the second closest of its kind to us. Using sensitive VLA observations, we have finally imaged its debated accretion disk in hot ammonia at centimeter wavelengths. We have resolved the accretion disk within a few hundred au of HW2, showing that circumstellar gas is collapsing nearly in free-fall and slowly orbiting at 40% the Keplerian velocity down to 200 au. At this distance from the star, gas piles up at very high infall rates of 0.002 Solar masses per year. I will discuss both state-of-the-art simulations and a toy model which reproduce our observations in detail, commenting on (1) how these new findings advance our knowledge of (proto-)stellar disks at large and (2) how they can drive future observations in the field.

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