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Citation

Federman, S., Megeath, S. T., Tobin, J., Watson, D., Evans, N., Gutermuth, R., ... Muzerolle, J. (2023). Early results from investigating protostellar accretion across the mass spectrum (IPA) with JWST. *Bulletin Of The American Astronomical Society*, 273.09. Retrieved from <https://hdl.handle.net/1887/3718900>

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Note: To cite this publication please use the final published version (if applicable).

Early Results from Investigating Protostellar Accretion Across the Mass Spectrum (IPA) with JWST

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Published on: Jan 31, 2023

URL: <https://baas.aas.org/pub/2023n2i273p09>

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We overview Investigating Protostellar Accretion (IPA), a JWST Cycle 1 program to study accretion and accretion driven feedback using the NIRSpec and MIRI MRS IFUs of JWST. IPA is targeting five protostars with luminosities of 0.2 to 10,000 L_{sun} , stellar masses of 0.1 to 12 M_{sun} , and distances of 150 pc to 1.6 kpc. Each shows a disk + outflow cavity morphology, is in its primary accretion phase, is deeply embedded, and requires observations at > 3 microns. With JWST's combination of sensitivity, angular resolution, and spectral resolution, IPA is observing each protostar in the 2.9-28 micron range and mapping ionic, atomic, molecular and continuum emission at spatial resolutions of 30 AU (for the lowest mass sources) to 300 AU (for the highest mass source). IPA is searching for spectroscopic signatures of disk accretion to measure the rate and mode of mass accretion, and to measure how accretion scales with stellar mass. It is also observing jets and the wide angle winds carving cavities into the protostellar envelopes. In total, IPA is resolving in unprecedented detail the coupled accretion and feedback that plays a central role in determining the masses of stars and the efficiency of star formation.

In this poster, we overview the results of the NIRSpec 2.9-5 micron data of our entire sample. Focusing on the detection and spatial distribution of atomic and molecular hydrogen, forbidden iron, and carbon monoxide lines, we identify jet, wind, and accretion tracers in the data cubes.