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NIRSpec spectroscopy of Pre-Main Sequence Stars in NGC 346

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We present a James Webb Space Telescope (JWST) survey of NGC 346, the most massive star-forming region in the Small Magellanic Cloud. This programme provides a comprehensive imaging and spectroscopic data suite with NIRCam, MIRI, and NIRSpec multi-object spectroscopy, and has been designed to constrain complex stellar populations of multiple generations and their physical characteristics, including accretion rates and variability. With a primary goal to fully characterise the young stellar objects and pre-main sequence (PMS) stars in NGC 346, our aim is to understand the evolution of their circumstellar environments. This presentation focuses on the NIRSpec spectroscopic observations of known PMS star candidates, previously identified with a combination of broad-band (V,I) and narrow-band (H α) Hubble Space Telescope photometry, with ages in the range 0–30 Myr. NIRSpec spectra reveal that these stars are indeed bona-fide PMS objects, even the older ones, with strong Hydrogen recombination lines. Prominent H₂ ro-vibrational lines are also present, witnessing molecular winds associated with shocks and/or photodissociation phenomena in the circumstellar discs. No such features are present in the spectra of main-sequence stars.