
Introducing the Cloud Factory: How galactic scale forces affect cloud morphology and dynamics

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Abstract

I present a new suite of simulations that resolve individual molecular clouds down to ~ 0.1 pc scales while they are embedded within a Spiral Galaxy. This uniquely enables us to study fragmentation and star formation within the resolved clouds in their true galactic context for the first time and compare to observed line-width relations. Our Arepo simulations include a time-dependent chemical model, gas self-gravity, the ISRF and gas self-shielding, magnetic fields, sink particles, supernova feedback, and photo-ionisation from sinks. By turning on these effects step-by-step in a series of simulations we can create a laboratory for testing the physics of the ISM and star formation from kpc scales to cold cores. Using this we find that the molecular clouds formed in our simulations have different morphologies and star forming histories depending on their local environment

Keywords: Star formation, ISM, Molecular clouds, simulations

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