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Editorial: Star formation: numerical simulations and what they teach us

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Editorial on the Research Topic
Star formation: numerical simulations and what they teach us

Star formation is a messy and chaotic mechanism that involves several physical processes including gravity, magnetic fields, turbulence, and stellar feedback. The interplay of the processes inherent to star formation are often interdependent and entangled, thereby hindering the acceptance of a universal theory of star formation. Therefore, it is challenging to determine the relative importance of the various processes, especially when this importance is environment-dependent.

State-of-the-art telescopes are providing ground-breaking observations of star-forming regions and young stellar objects with unprecedented detail. Such observations have shed light on how these various physical processes work in concert to lead to star formation. Simultaneously, state-of-the-art numerical simulations are greatly advancing star formation theory on all scales—from the birth of isolated stars to the formation and early evolution of entire star clusters. These simulations are providing detailed explanations of the effects of the various physical processes and attempting to decouple their effects. On their own and also by comparing to observations, numerical studies are greatly advancing star formation theory.

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Conflict of interest

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