Jeudi 23 juin 2022 à 11h (IAS, bâtiment 121, salle 1-2-3)

Rethinking the proto-planetary disc turbulent paradigm

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Planets form in proto-planetary discs, which provide the gaseous and solid building blocks to assemble planets. Therefore, only if we understand proto-planetary discs can we build a successful planet formation theory. I will discuss how the field is critically reconsidering the general framework we use to describe proto-planetary discs, namely the assumption that they are turbulent objects. I will discuss the growing tension between this assumption and observations taken in the last few years with new instruments, especially with the sub-mm interferometer ALMA, that allow us to conduct entire surveys of proto-planetary disc populations, giving us a chance to probe the inventory of planet-forming material. I will introduce a possible alternative and chart a way forward I plan to investigate in the next few years. Finally, I will discuss how we are also starting to detect young, forming planets still embedded in proto-planetary discs. I will discuss what kind of planets we are currently capable of detecting in discs and how we can measure their masses from observations, using extremely precise measurements of the gas velocity.