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Presentation Title: Rings and self-organization in magnetized protoplanetary discs

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The radio-interferometer ALMA and the new generation of instruments like SPHERE have imaged a variety of structures in protoplanetary discs. One of the most striking features are the concentric rings (or gaps), observed in many discs like HL Tau or TW Hydra. Although the planet hypothesis is attracting, alternative mechanisms like self-organization from MHD effects can also account for the observed ring shape. In this talk, I will discuss the fundamental processes behind self-organization and characterize the ring properties with respect to the disc parameters. Using both theory and simulations, I will show in particular that rings are a generic feature of magnetized discs and may result from a secular instability involving winds. I will finally examine implications of these results for planet formation.