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Mining the kinematics of discs to hunt for planets in formation

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Citation

Izquierdo Cartagena, A. F. (2023, December 1). *Mining the kinematics of discs to hunt for planets in formation*. Retrieved from <https://hdl.handle.net/1887/3665447>

Version: Publisher's Version

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Propositions
accompanying the thesis

Mining the kinematics of discs to hunt for planets in formation

1. Coherent localised deviations from Keplerian rotation are robust signatures of embedded planets in discs. (*Chapters 2 & 3*)
2. Not all intensity kinks are related to localised kinematic signatures and planets, but their presence is an indication of active disc dynamics. (*Chapters 2 & 4*)
3. Velocity and line width perturbations suggest the presence of massive embedded planets at wide orbits in five of the eight discs analysed. (*Chapters 3, 4 & 5*)
4. Line broadening is a solid tracer of planets with several Jupiter masses. (*Chapter 5*)
5. Precise mapping of line profiles allows us not only to hunt for planets but also to make a three-dimensional tomography of the disc's physical structure. (*All chapters*)
6. The wealth of data encoded in spectral line fluctuations does not discriminate scales; from hidden planets in discs to turbulence in molecular clouds, all in one place.
7. Whether one is coding or writing a paper, starting with a solid skeleton is a major time-saver.
8. A great gift without a good wrapping loses its charm. The same applies to scientific figures, software and presentations.
9. The right balance between networking and independent thinking will give your science a distinctive edge.
10. Obtaining more and better data should always be a priority, but the development of models should also keep pace with this progress.
11. Long journeys are always filled with little treats; do not overlook them, and they will lighten your walk.
12. Sometimes the urgent does not leave time for the important. Times to slow down and reflect are very important.

Andrés F. Izquierdo
Leiden, 01 December 2023