

Planet ingestion on a pre-main sequence star: the case of 2MASS J08095427–4721419 in the Gamma Velorum cluster.

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We performed a theoretical study of the effects of planet ingestion on the characteristics of a pre-MS star. We applied our analysis to the case of the Gamma Velorum cluster member 2MASS J08095427–4721419, which shows a peculiar over-abundance of metals with respect to the other cluster members. We analyzed the effects on the star of changing the characteristic of the accretion episode, namely the age at which the planet is ingested (t_0), the planet mass and its chemical composition. We showed that the mass of the ingested planet required to explain the metals over-abundance increases by decreasing the age t_0 and by decreasing the iron content of the planet. We also discussed the systematic errors in the inferred stellar mass and age when a grid of non-accreting models is used to recover the characteristic of a star that undergoes to a planet ingestion episode. Effects on the star are still visible long after the planet ingestion episode.

Primary author: TOGNELLI, Emanuele (Università di Pisa/INFN)

Co-authors: PRADA MORONI, Pier Giorgio (PI); DEGL'INNOCENTI, Scilla (PI)

Presenter: TOGNELLI, Emanuele (Università di Pisa/INFN)

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