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Exoplanet-hosting stars give key insights on planet formation

ANI

Washington, Fri, 17 Aug 2012

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Washington, August 17 (ANI): An international team of researchers has proposed that metals like magnesium might have an important role in the formation of low mass planets.

The team, lead by EXOEarths researcher (Centro de Astrofísica da Universidade do Porto, CAUP) Vardan Zh. Adibekyan, analyzed high resolution spectra of 1,111 Sun-like stars, obtained by the HARPS spectrograph (ESO).

Of these stars, 109 are known to harbour high mass (Jupiter-like) planets, and 26 have Neptune-like planetary companions.

For the study, the team focused especially on studying the abundance of alpha elements in these stars, like magnesium (Mg), silicon (Si) or titanium (Ti).

The research found that the ratio of these, compared with the amount of iron (Fe), was consistently higher in stars with planets, with the greatest discrepancy observed for Mg.

"These findings indicate that some metals other than iron are involved in the process of planet formation, especially when the amount of iron is lower than solar. These results may provide strong constraints for the models of planet formation, especially for planets with low mass," Adibekyan, lead author of the paper, said.

The leading theories of planet formation suggest that planets form by clumping smaller particles of heavy elements (metals), into larger and larger bodies.

The results put forward by the present study suggest that planets need a minimum amount of "metals" to be formed. The formation of planets, even the lowest mass ones, is dependent on the dust content of the cloud that gave origin to the star and planetary system. (ANI)

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