

Hill's radius estimation for exoplanets

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Abstract

We estimate the value of Hill's radius for all the extrasolar planets discovered until now. It is observed that Hill's radius decreases as the planet decreases its distance to the star. Therefore we propose that if the planets had migrated towards their star, as proposed by some theories of formation of solar systems, then the satellites that the planets could have had would have been expelled to orbits around their star. Then almost all the extrasolar planets near their stars are solitary bodies without satellites. We obtain a limit to this condition. The expelled satellites could orbit the star in a Trojan position or be expelled from the system. Only in the case of Earth-like Trojans we can think that a pre-biotic and biotic chemistry could emerge.