

October 23, 2008
Colloquium Joint Astronomy – EPS

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Titan: Saturn's Earth-like Moon

Saturn's large satellite, Titan, is unique for having an earth-like atmosphere of nitrogen, a cycle of methane similar to the hydrological cycle on earth, clouds, rain, channel networks and river basins presumably sculpted by the rain of methane and ethane, somewhat similar to the geological features on the earth. In its primordial past, Titan also possessed the conditions – presence of (liquid) water, ammonia and methane, a warm environment and energy – necessary for the formation of prebiotic, perhaps even biogenic, species. Using evidence from Cassini-Huygens Mission and ground-based telescopes, I will discuss in this lecture the factors that have contributed to the above unique nature of Titan in the solar system.