

Effects of the charged particles of solar wind on planetary atmospheres

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The charged particle of H^+ is radiated at an average speed of about 450km/sec from the Sun. It has a rotating component (2km/sec) of the Sun's rotation. There is no geomagnetic field caused from the inner core of Venus. The charged particles of solar-wind those possess large kinetic momentum. Those collide to the thick atmospheric molecules facing the Sun of Venus. The collisions of the solar wind with angular momentum of anti-clockwise direction causes super-rotation of Venus in the direction of clockwise.

Titan has a super-rotation of 120 m/s at an altitude of 120km. Radius 1.1 million km of the Titan's orbital passes through the stretched portion of the magnetosphere of Saturn at 1.2 million km. Titan's orbital is running through in a part of magnetosphere of Saturn. The rotation period of Titan is about 16 days that is the same as the revolution period of Titan by gravitational lock. So, the surface of Titan receives shower of the charged particle of H^+ in Saturn's magnetosphere at repeating period of 10.7 hours. The movement speed of the magnetosphere in the orbit of the Titan is 200 km/sec. The super-rotation of Titan is caused by the difference of moving speed of the H^+ shower on surface of Titan facing Saturn's side and the backside. Maximum difference of moving speed of the shower is 843 m/sec in counter-clockwise direction. [Website by S. Karasawa,

<https://www.youtube.com/watch?v=zPSOD3YAAXw&feature=youtu.be>]

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