Contribution ID: **109** Type: **Talk**

Autonomous spacecraft navigation with pulsars

Tuesday 12 May 2015 11:20 (40 minutes)

An external reference system suitable for deep space navigation can be defined by fast spinning and strongly magnetized neutron stars. Their beamed periodic signals have timing stabilities comparable to atomic clocks and provide characteristic temporal signatures that can be used as natural navigation beacons, quite similar to the use of GPS satellites for navigation on Earth. By comparing pulse arrival times measured on-board a spacecraft with predicted pulse arrivals at a reference location, the spacecraft position can be determined autonomously and with high accuracy everywhere in the solar system and beyond. The unique properties of pulsars make clear already today that such a navigation system will have its application in future astronautics. In my talk we will describe the basic principle of spacecraft navigation using pulsars and report on the current development status of this novel technology.

Author: BECKER, Werner (Max Planck fur Extraterrestrische Physik - MPE, Garching, Germany)

Presenter: BECKER, Werner (Max Planck fur Extraterrestrische Physik - MPE, Garching, Germany)

Track Classification: STARS2015