



Contribution ID: 363

Type: **Talk**

Accretion and rotation power in ms pulsars

Wednesday 16 December 2015 16:45 (25 minutes)

Neutron stars in low mass X-ray binaries can be spun-up to millisecond rotational periods by accreting the matter transferred by a companion star. When the rate of mass transfer decreases at the end of this Gyr-long X-ray bright phase, a radio pulsar powered by the rotation of the neutron star magnetic field turns on. Recently, the evolutionary link between these two classes of sources was finally proven by the XMM-Newton discovery of a millisecond pulsar observed to swing between accretion (X-ray bright) and rotation (radio bright) pulsar behaviour. This source is the prototype of a new class of transitional systems that alternate between accretion and rotation-powered states in response to variations of the rate of mass in-flow, on time scales as short as a couple of weeks. Observations of this and other similar systems indicate that transitions to the accretion phase not only involve bright X-ray outbursts, but also a fainter intermediate X-ray state, possibly caused by centrifugal inhibition of the matter in-fall. I will summarize the main observed properties, as well as prospects of finding more sources of this newly established class.

Author: Dr PAPITTO, Alessandro (Space Science Institute Barcelona (ICE) CSIC-IEEC)

Presenter: Dr PAPITTO, Alessandro (Space Science Institute Barcelona (ICE) CSIC-IEEC)

Session Classification: 15 - Binaries