

## **Numerical simulation of the interaction between planetary exospheres and the stellar wind.**

**Ada Canet<sup>1</sup> and Ana I. Gómez de Castro<sup>1</sup>**

<sup>1</sup> AEGORA Research Group, Universidad Complutense de Madrid, Plaza de Ciencias 3, E-28040 Madrid, Spain

### **Abstract**

Bow shock formation, magnetic reconnection and plasmoid ejection are thought to be present in most planetary environments. The aim of this work is to show that the presence of this kind of structures in the vicinity of planets is not restrictive to magnetized bodies. The presence of an interplanetary magnetic field carried with the stellar wind is responsible of the formation of a planetary magnetotail, ejection of plasmoids and magnetic reconnection events, even though the planet-obstacle is completely unmagnetized. We study the interaction of this magnetized winds coming from cool MS stars, solar analogues, with non-magnetized terrestrial planets provided of an extended earth-like exosphere through 2.5D numerical simulations carried out with PLUTO. In this work, we show a preliminary study of the impact of stellar winds on the evolution and stability of Earth-like atmospheres/exospheres, in order to determine the position of the bow shock and its properties, and the position of the X point of magnetic reconnection in the case of non-magnetized rocky planets, in order to determine their emission and possible detection through these structures in the stellar winds. (See poster).