



## The Pulsating Heat Pipes: experimental analysis and numerical simulations in terrestrial and microgravity conditions

The Pulsating Heat Pipes (PHP) belong to the thermal system category of heat pipes, two-phase passive thermal devices used to transfer heat from a hot source to a cold region, with very high equivalent thermal conductivity - higher than any usual metallic material - light, and able to manage high heat fluxes. The PHP add to standard two-phase passive systems the option to cover large surfaces, the very simple construction, the possibility to use very different materials and working fluids, the geometrical adaptability and flexibility. An a-priori design of a PHP is still difficult, even if in the last years a better comprehension of the internal physical processes has led to accurate predictions of the experimental results. The internal phenomena of a PHP are very complex and intriguing, and the direct numerical simulations of two-phase flows with phase change is a very challenging and fascinating area for both the mathematical and physical side. This presentation aims to offer an introduction to our experiments on ground and in microgravity conditions, through Parabolic Flight and Sounding Rocket Campaigns, and to our most recent numerical analysis.



**Prof. Marco Marengo**

Chair of the Professoriate Advisory Group  
University of Brighton – Brighton, UK

**December 1<sup>st</sup>, 11:30am**

**DICAr MS1 Meeting Room**

Via Ferrata, 3 – Pavia