

## **El BSC and the European Space Agency extend their collaboration to analyze multicores in space applications**

In February 2011 BSC and the European Space Agency (ESA) started a research collaboration project, under contract ESTEC Contract AO/3-13153/NL/JK, to analyse the use of multicore processors in the space domain. This project has finalised successfully and both institutions have agreed to keep their collaboration one more year to analyse a candidate microprocessor to be used in Solar Orbiter Project.

The “Multicore OS benchmark” Project has focused on developing a set of benchmarks that can be used to test the suitability of actual multicore processors for space environments. In particular, the researchers of the Computer Architecture/Operating System (CAOS) group Francisco J. Cazorla, Eduardo Quinones and Mikel Fernandez, paid special attention to the Next Generation General purpose Microprocessor (NGMP), developed under ESTEC Contract No. 22279/09/NL/JK.

The project, which finalised on April 2012, on the one hand, has shown the main resources of the NGMP on which the interaction of applications led to high execution time slowdowns. On the other hand, the project defined a methodology to analyse the usability of multicore processors in space domains. The results of the project were presented in the ‘Software Systems Division & Data Systems Division Final Presentation Days’ on April 2012 in the European Space Agency. Some of the results of the project have also been accepted for publication in a top tier conference, EMSOFT, to be held in October in Finland.

Due to the success of this project, BSC and ESA have started the definition of an extension of this project. This extension will focus on the GR712RC Dual-Core LEON3 processor ([http://www.gaisler.com/cms/index.php?option=com\\_content&task=view&id=364](http://www.gaisler.com/cms/index.php?option=com_content&task=view&id=364)) that might be used on the Solar Orbiter project. The purpose is to analyse the main resource bottlenecks in the GR712RC. The project will also focus on real-time task scheduling in multicore architectures.



Photo: ESA