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GISCU Space mechanisms heritage

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During the past twenty years the payloads engineering team (GISCU) of the scientific payloads department, belonging to INTA (Spanish National Aero-Space Institute) has contributed to several space missions with the development of different tasks including the mechanical design, thermal design, assembly, integration and test of scientific payloads. One of the areas in which the group is increasing its activity is in the development of space mechanisms for different optical and infrared instruments. The activities of the group referred to the space mechanism not only focused in the design; it also includes the manufacturing process, the integration and also the environmental test required for the different missions. With designs based on commercial components and highly adaptable for different missions. The Osiris instrument filter wheel mechanism developed for the Rosetta mission, launched on 2004 and that it will reach Comet 67P/Churyumov-Gerasimenko in August 2014 is one of the most important contributions. The mechanism consists on two filter wheels, one for each with a configuration based on two coaxial discs with eight filter positions for each disc that allows the interposition of one of the filters of each disc between the mechanical shutter and the CCD of each camera. The phase diversity mechanism was developed for the IMAx instrument. It allows the movement of plane parallel plate between their two nominal positions. During the past three years the group has been involved in the design of a cryogenic filter wheel. The wheel has been developed during the phase B of the Safari instrument of the SPICA mission, it is based on a one disc configuration with six filter positions. The Breadboard model has been successfully tested at 18 K; it consisted on a material compatibility, power dissipation and repeatability tests.

Biography

J Azcue completed his BS Degree in Mechanical engineering in 1998 at Parks Collage of Saint Louis University. He is one of the Mechanical engineers of the GISCU laboratory at the Spanish National Aerospace Institute for the past nine years, performing tasks in the areas of mechanical design, integration and tests of payloads. Over the past three years he has been in charge of the design group of the cryogenic filter wheel for the SAFARI instrument on the ESA/JAXA SPICA mission. Before he has also work as structural engineering for Tecnicas Reunidas at Madrid, Spain.

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