SYMPOSIUM ON TECHNOLOGICAL REQUIREMENTS FOR FUTURE SPACE ASTRONOMY AND SOLAR-SYSTEM SCIENCE MISSIONS (A7)
Technology Needs for Future Scientific Payloads (4)

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CRYOGENIC SOLUTIONS FOR DETECTOR COOLING

Abstract

In the context of future scientific missions that shall require cryogenic cooling, solutions have been developed ranging from 200 K down to the milliKelvin. The current solutions available benefit from flight heritage in science missions hallmarks such as Herschel or Planck. The most recent detector technology developments such as the TES also call for closed optimized cryostats with a full cryogenic chain from 300 K to 50 mK. The different cooler solutions are shown, such as the 15 K Pulse Tube Cooler or the Closed Cycle Dilution Refrigerator, as well as the more specific case of a cryostat breadboard demonstrator, that could take the form of an ESA Core Technology Program.

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