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First Cooling of the Refrigeration Line Designed for the Cryogenic Payload in the ARC Laboratory

The Amaldi Research Center (ARC), located at Sapienza University of Rome, will host the first experiment of a cooling system designed for a full-scale cryogenic payload. Following the solid conduction cooling approach, two refrigeration lines, each driven by two Pulse Tube cryocoolers, will be used to cool down a cryogenic payload housed in a specially designed 3-meter-tall cryostat.

The laboratory was inaugurated on April 4th, and following this, the first refrigeration line, equipped with a test chamber, was successfully cooled down. The vibrations from the Pulse Tube cryocoolers have been effectively damped using soft heat links to connect suspended components within the refrigeration line. The vibration contribution was measured using cryogenic sensors and interferometry-based sensing along the line.

The payload has been successfully assembled and it is currently in the black coating phase, with completion expected by the end of 2025. The cryostat, featuring the Rigid Multi-Layer solution, is scheduled for delivery in late 2025.

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