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## **Experimental investigation of compact 2K GM cryocoolers**

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On the base of a conventional 4K Gifford-Mcmahon (GM) cryocooler, we developed a new 2K GM cryocooler system which can provide considerable cooling capacity and yet being highly compact in physical size. A series of experiments were operated to confirm and show the cooling characteristic and cooling capability of this new system. It will be shown that under no-load condition the lowest temperature reached about 2.2K on the exterior surface of the second stage and temperature oscillation displacement was less than  $\pm 20\text{mK}$ . Detailed cooling load-map and cooling-down curve will also be introduced in this paper.

The research results have been achieved by "Development of a Compact Superconducting Single Photon Detector System for Photon-Quantum Information and Communication", the National Institute of Information and Communications Technology(NICT), Japan.

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