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Thermal and vibrational studies of a new germanium detector for X-ray spectroscopy applications at synchrotron facilities

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The European LEAPS-INNOV project has launched a Research and Development program dedicated to the design of a new generation of germanium detectors for X-ray spectroscopy applications. The present article shows the results of the thermomechanical simulations of this design, based on finite element analysis (FEA) studies, under vacuum and cryogenic conditions. The first results of these simulations were published at IPAC'23*. In this new work, the final results are presented, which includes the thermal optimization of the detector with respect to the previous study, as well as new numerical simulations to investigate the effects of vibration transmission from the cryocooler to the head detector.

Footnotes

- M. Quispe, "Thermal Mechanical Simulations of a New Germanium Detector Developed in the European Project LEAPS-INNOV for X-Ray Spectroscopy Applications at Synchrotron Facilities", Proceedings of IPAC2023. Venezia, Italy May 11, 2023

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