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| Title of the project | Upgrade of pulse-tube cooled dilution refrigerator which is used for the optimization of particle detectors, operated in the Gran Sasso underground laboratory  CNRS 03 |
| User group leader | Giuliani, Andrea, professor |
| Users | Giuliani, Andrea, professor |
| Home Institute | University of Insubria, Como, Italy |
| Description of the work | Our team in Como is involved in the Project CUORE, investigating the neutrino­less Double Beta Decay of the isotope Te-130 in an experiment located in the Gran Sasso underground laboratory. For this purpose, very low temperature bo­lometers are used. Several key parameters influence the quality of the system: the minimum temperature, the consumption of cryo­genic fluids, and the refrigerator cooling time. For this reason, we wanted to benefit from the latest improvements in very low temperature technol­ogy, through the Grenoble TA2 facility of the FRP7 Microkelvin Infra­structure.  The work performed within this project consists of the design and con­struction of a new condensation stage on the pulse-tube cryocooler to re­duce the mixture con­densation time. This is now completed.  The second part of the project, i.e. the development and construction of new heat exchangers to reduce the minimum temperature, is presently on-going, underta­ken essentially by TA2 technical and scientific personnel. A second visit by the Como team will take place for the final tests of the equipment. |
| Amount of access given | 7 days |