

THE FRENCH FACILITY FOR HIGH MAGNETIC FIELDS

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Abstract: The LNCMI (Laboratoire National des Champs Magnétiques Intenses) is part of the EMFL (European Magnetic Field Laboratory), together with the Nijmegen and the Dresden high magnetic field laboratories. The LNCMI provides to researchers magnetic fields up to 35 T in a 34 mm room temperature bore in a continuous mode at the Grenoble site and up to 80 T in a pulsed mode at the Toulouse site. Magnetic fields as well as related instrumentation are available in different bore sizes.

These last years, high field magnets have been used for diamagnetic levitation experiments (water in a 50 mm bore) and Hydrogen in a 170 mm warm bore diameter within a collaboration with the CNES and the CEA.

A new activity concerning metallurgy under high magnetic fields is rising including the development of dedicated high temperature furnaces.

For the design of the high field magnets, the LNCMI uses the polyhelix technology that is particularly suitable for high gradient magnets. The possibilities offered by such a technology will be presented to open discussion with potential users.



Figure: Top view of a 35 T high field magnet at LNCMI – Grenoble.