Operation of a High-T_c DC-SQUID-Gradiometer on a Non-Metallic Pulse Tube Refrigerator

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Abstract - A planar high-T_c DC-SQUID gradiometer has been operated with a specially developed low-noise pulse tube refrigerator. The cold finger of the refrigerator consists only of non-metallic and non-magnetic materials. During the operation of both the sensor and the refrigerator, the noise generated by the cryocooler is below the noise level of the SQUID-gradiometer. We demonstrate the potential of this non-metallic pulse tube refrigerator by measuring the magnetic field originating from a human heart (magnetocardiogram), without additional suppression of the intrinsic refrigerator noise.

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