Abstract Submitted
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Magnetic control of crystal chirality and gigantic magneto-chiral effect in CuB_2O_4 MITSURU SAITO, KENTA ISHIKAWA, KOUJI TANIGUCHI, TAKA-HISA ARIMA, IMRAM Tohoku University — The possibility of a magnetic-field control of the chirality of matter has been debated since 19th century, because of its importance in the problem of homochirality. However, the difference of symmetry between magnetic fields and chirality implies that it would be impossible to induce chirality by a magnetic field alone. Here, we report the successful induction of crystal chirality in a noncentrosymmetric canted antiferromagnet, CuB_2O_4, by the application of a low-intensity static magnetic field[1]. The chirality is reversed by a 90-degree rotation of the direction of the magnetic field. This is the first successful magnetic control of chirality to the best of our knowledge. The induction of chirality by a magnetic field gives rise to a gigantic enhancement of magneto-chiral dichroism in this material. The magnitude of the effect is larger by three orders than the previous reports. The extraordinary enhancement allows us to design new magneto-optical devices. [1] M. Saito *et al.,* Phys. Rev. Lett. **101** 117402 (2008).

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