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Linear magnetoresistance of hetroepitaxial thin films of pyrochlore iridates $Bi_2Ir_2O_7$ JIUN-HAW CHU, Materials Science Division, Lawrence Berkeley National Laboratory, SCOTT RIGGS, MAXWELL SHAPIRO, Department of Applied Physics and Geballe Laboratory for Advanced Materials, Stanford, JIAN LIU, Materials Science Division, Lawrence Berkeley National Laboratory, CLAUDY RYAN SERERO, DI YI, Department of Materials Science and Engineering, University of California, Berkeley,, MATTHEW MELISSA, Department of Physics, University of California, Berkeley, S.J. SURESHA, Materials Science Division, Lawrence Berkeley National Laboratory, CARLOS FRONTERA, Institut de Ciencia de Materials de Barcelona, ICMAB-CSIC, ASHVIN VISHWANATH, Department of Physics, University of California, Berkeley, XAVI MARTI, Department of Materials Science and Engineering, University of California, Berkeley,, IAN FISHER, Department of Applied Physics and Geballe Laboratory for Advanced Materials, Stanford, R. RAMESH, Materials Science Division, Lawrence Berkeley National Laboratory — We report on the discovery of linear magnetoresistance in hetroepitaxial thin films of the pyrochlore iridates $Bi_2Ir_2O_7$. The magnetoresistance of $Bi_2Ir_2O_7$ shows a highly isotropic, linear field dependence at T = 1.6K, but gradually evolves towards a quadratic field dependence as temperature increases. By interfacing the $Bi_2Ir_2O_7$ with pyrochlore spin ice compound $Dy_2Ti_2O_7$, the magnetoresistance at sub-kelvin temperatures shows pronounce anisotropy with a complex field dependence. We argued that these unusual magnetotransport behaviors cannot be explained by disorder induced quantum correction, but might be related to the magnetism of $Bi_2Ir_2O_7$.

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