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Magnetic-filed-induced polarization in the square-lattice antiferromagnetic $Ba_2CoGe_2O_7$ HEE TAEK YI, YOUNG JAI CHOI, SEONGSU LEE, SANG-WOOK CHEONG, Rutgers University — We have discovered the appearance of ferroelectricity below the Neel temperature of 6.7 K in the square-lattice antiferromagnetic $Ba_2CoGe_2O_7$ single crystal, grown by using a floating zone technique. The ferroelectric polarization aligns along the tetragonal c axis, but is very small in magnitude. However, the magnitude of polarization increases remarkably and the polarization direction smoothly rotates away from the c axis with increasing magnetic fields along the c axis. This change of polarization and the associated change of dielectric constant with fields are monotonic without going through any phase transition.

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