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Josephson-vortex states in $Bi_2Sr_2CaCu_2O_{8+y}$ KAZUTO HIRATA, National Institute for Materials Science, SHUUICHI OOI, TAKASHI MOCHIKU — Josephson-vortex (JV) states have been studied by measuring the flow resistance in $Bi_2Sr_2CaCu_2O_{8+y}$ (Bi-2212) as a function of the parallel magnetic field with the current along the *c*-axis. From the periodic oscillations, we can assign the three-dimensionally long-range-ordered state (3DLOS) of JVs (PRL**89**, 247002(2002), Physica **C412-414**, 454(2004)). The lower and upper boundaries of 3DLOS were determined from the magnetic field of beginning and stopping in the oscillations, respectively. From the flow resistance and the $I-V$ characteristics measurements crossing the upper boundary, we suggest that the JVs are in ordered state in *in-plane*, but have less ordering along the *c*-axis. This JV state may correspond to the 2D-quasi-long-range ordered state, proposed by Hu&Tachiki (PRB**70**, 064506(2004)).

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