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Meissner holes in iron-based superconductors[1] TSUYOSHI TAMEGAI, SHYAM MOHAN, YUJI TSUCHIYA, YASUYUKI NAKAJIMA, Department of Applied Physics, The University of Tokyo — Magnetic flux penetrates into a superconductor in the form of quantized vortices. This process is usually described by the Bean model, and the flux front forms a regular pattern reflecting the shape of the sample. However, a novel form of flux penetration accompanying wiggling fronts between vortices and antivortices has been observed in $YBa_2Cu_3O_{7-\delta}$ upon remagnetization [1]. Such a phenomenon is ascribed to the presence of special arrangements of vortices at the front accompanying flux free regions and excess current around it. The flux free region is called as 'Mesissner hole'. We have performed extensive magneto-optical imagings of iron-based superconductor single crystals and found similar anomalous features for the first time in superconductors other than 123-type cuprates [2]. Implications of this finding will be discussed with possible origins of the anomalous vortex arrangements. [1] V. K. Vlasko-Vlasov *et al.*, Phys. Rev. B **56**, 5622 (1997). [2] S. Mohan, Y. Tsuchiya, Y. Nakajima, and T. Tamegai, Phys. Rev. B **84**, 18050X (2011).

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