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Anti-parity-time symmetry via flying atoms JIANMING WEN, Yale Univ, LIANG JIANG, Yale University, YANHONG XIAO, PENG PENG, WANXIAO CAO, CE SHEN, WEIZHI QU, Fundan University — We report the first experimental demonstration of optical anti-parity-time (anti-PT) symmetry [1], a counterpart of conventional PT symmetry [2], in a warm atomic-vapor cell. By exploiting rapid coherence transport via flying atoms, our scheme illustrates essential features of anti-PT symmetry with an unprecedented precision on phase-transition threshold, and substantially reduces experimental complexity and cost, in contrast to most previous experimental studies relying highly on the advances of nanotechnologies and sophisticated fabrication techniques to synthesize solid-state materials. Of importance, our results represent a significant advance in non-Hermitian physics by bridging a firm connection with the field of atomic, molecular and optical physics, where novel phenomena and applications in quantum and nonlinear optics aided by (anti-)PT symmetry can be anticipated. [1] P. Peng, W. Cao, C. Shen, W. Qu, J. Wen, L. Jiang, and Y. Xiao, arXiv: 1509.07736 (2015). [2] L. Chang, X. Jiang, S. Hua, C. Yang, J. Wen, L. Jiang, G. Li, G. Wang, and M. Xiao, *Nature Photonics* **8**, 524-529 (2014).

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