

Abstract Submitted
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Multi-state magnetoresistance in ferromagnet/organic-ferromagnet/ferromagnet junctions.¹ GUICHAO HU, Shandong Normal University, SHIJIE XIE, Shandong University — Organic ferromagnets (OFs) are fascinating in the field of organic spintronics, since they combine both the ferromagnetic and organic properties. The utilization of OFs in the design of organic spintronic is promising to generate some novel effects [1-4]. Here, we designed an organic spin valve by sandwiching the OF between two ferromagnets. By calculating the spin-dependent transport property, we found that the current through the device strongly depends on the alignment of the magnetization orientation of the electrodes and the OF. The spin-related electron tunneling between the ferromagnetic electrodes suffers a further spin selection from the spin-polarized states of the central OF. This work indicates a realization of four-state magnetoresistance based on OFs, which may be manipulated by a magnetic field to control the magnetization orientations of the ferromagnets and the OF. [1] G. C. Hu, M. Y. Zuo, Y. Li, J. F. Ren, and S. J. Xie, *Appl. Phys. Lett.* 104, 033302 (2014). [2] G. C. Hu, H. Wang, J. F. Ren, S. J. Xie, and C. Timm, *Org. Electron.* 15, 118 (2014). [3] G. C. Hu, K. L. He, A. Saxena, and S. J. Xie, *J. Chem. Phys.* 129, 234708 (2008). [4] G. C. Hu, Y. Guo, J. H. Wei, and S. J. Xie, *Phys. Rev. B* 75, 165321 (2007).

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