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Spin dynamics for wave packets in Rashba systems BAILEY C. HSU, JEAN-FRANCOIS S. VAN HUELE, Brigham Young University — We explore the spin dynamics of wave packets inside Rashba systems using a spin propagator approach. A spin propagator gives conditional probability amplitude between two points in position and spin space at a time interval [1]. We derive and apply the Rashba spin propagator to localized spin wave packets. We observe several interesting features, such as *spin separation*, *persistent spin helix*, *bamboo-shooting structure*, *ripple formation structure*, and others [2]. We discuss these features which depend critically on the choice of both the width of the wavepacket and the Rashba coupling strength quantitatively with realistic experimental data. [1]B. C. Hsu and J.-F. S. Van Huele, J. Phys. A: Math. Theor., **42**, 475304 (2009). [2]B. C. Hsu and J.-F. S. Van Huele, Phys. Rev. B, **80**, 19XXXX (2009).

Bailey C. Hsu
Brigham Young University

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