

Abstract Submitted  
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**Casimir effect in spin-orbit-coupled materials**<sup>1</sup> ANDREW ALLOCCA, JUSTIN WILSON, VICTOR GALITSKI, Univ of Maryland-College Park — We propose the Casimir effect as a general method to observe Lifshitz transitions in two-dimensional electron systems. The concept is demonstrated with a planar semiconductor system with Rashba spin-orbit coupling and an applied Zeeman field. We calculate the Casimir force between the semiconductor and a plane parallel metallic plate at fixed separation as a function of the Zeeman splitting in the semiconductor. We find that as the Zeeman energy increases, the vanishing of a Fermi surface in either the upper or lower band of the Rashba system is indicated by a kink in the Casimir force.

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