

Abstract Submitted
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Zero Bias Anomaly in Point Contact Andreev Reflection Spectroscopy¹ JESSICA GIFFORD, GEJIAN ZHAO, BOCHAO LI, JI ZHANG, DONGRIN KIM, TINGYONG CHEN, Arizona State University — h
— *abstract* — \pard Zero bias anomaly (ZBA) in point contact Andreev reflection spectroscopy (PCAR) has been utilized as a characteristic feature to reveal many novel physics including superconductivity with nodes, topological superconductivity, Majorana states, and two band superconductivity. However, complexities at a superconductor/normal metal interface often causes nonessential ZBA-like features, which may be readily mistaken as ZBA. In this work, we show that an intrinsic ZBA in a *d*-wave superconductor, which is due to the Andreev reflection, can be suppressed by a spin-polarized current while a nonessential ZBA cannot be affected by a spin-polarized or half-metallic current and can be induced in conventional superconductors, therefore it is extrinsic to the superconductor. By systematically varying the contact resistance, we find that the non-essential ZBA depends on the contact resistance and evolves from properties of a specific interface while the intrinsic ZBA is independent of point contacts. This work demonstrates that it is crucial to administer PCAR correctly in the proper region to obtain the intrinsic properties of the materials in question to reveal new physics. \pard-/abstract-\

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