

Abstract Submitted  
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**Multiple Bardasis-Schrieffer modes and role of vertex corrections in Raman Spectroscopy** SAURABH MAITI, University of Florida, THOMAS MAIER, Oak Ridge National Laboratory, THOMAS BOEHM, RUDI HACKL, Walther Meissner Institut, PETER HIRSCHFELD, University of Florida — We formulate a multiband theory of Raman Response by accounting for vertex corrections and using the same microscopic interactions that lead to pairing. Doing so, in the  $B_{1g}$  channel, we find that each attractive  $B_{1g}$  solution within a microscopic pairing theory gives a Bardasis-Schrieffer(BS) mode: thus there can be multiple BS modes. We argue that the entire Raman spectrum is actually dominated by contributions from vertex corrections. We also argue that the same holds in the  $A_{1g}$  channel and that the previously used screening diagrams are not relevant for Raman spectroscopy. We discuss the results in the context of recent measurements on heavily hole doped  $Ba_{1-x}K_xFe_2As_2$ , where the theory makes it possible to deduce more information about the pairing interaction than previously anticipated.

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