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Raman resonance due to magnetic fluctuations in iron-based superconductors JIASHEN CAI, ALBERTO HINOJOSA, ANDREY CHUBUKOV, University of Minnesota — We perform theoretical analysis of polarization-sensitive Raman spectroscopy on $NaFe_{1-x}Co_xAs$ and $Ba(Fe_{1-x}Co_x)_2As_2$, focusing on two features seen in the B_{1g} symmetry channel (in one Fe unit cell notation): the strong temperature dependence of the static, uniform Raman response in the normal state and the existence of a collective mode in the superconducting state. We show that both features can be explained by the coupling of fermions to pairs of magnetic fluctuations via the Aslamazov-Larkin process. We argue that the singular temperature dependence in the normal state comes from the Aslamazov-Larkin vertex, while the resonance is due to the interaction between two propagating spin fluctuations in an s^{+-} superconductor.

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