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**Manifestation of nematic degrees of freedom in the Raman response function of iron pnictides** UNA KARAHASANOVIC, JOERG SCHMALIAN, Karlsruhe Institute of Technology — The electronic nematic phase in pnictides, characterized by the broken C4 symmetry, is believed to be generated by the presence of magnetic fluctuations associated with the striped phase, and occurs as a thin sliver in the phase diagram, above the magnetic transition temperature. Detecting the presence of nematic degrees of freedom in iron-based superconductors is a difficult task, since it involves measuring four spin correlation functions. We show that the nematic degrees of freedom manifest themselves in the experimentally measurable Raman response function, which is a density-density correlation weighted by an appropriate form factor. We calculate the Raman response function in the large N limit by considering Aslamazov-Larkin type of diagrams that contain series of inserted boxed-like diagrams that resemble the nematic coupling constant of the theory. These diagrams effectively account for collisions between spin fluctuations. We demonstrate that the Raman response function diverges at the structural phase transition.

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