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Sensitivity of gap symmetry to an incipient band: Application to iron based superconductors[1] VIVEK MISHRA, Oak Ridge National Laboratory, DOUGLAS SCALAPINO, University of California, Santa Barbara, THOMAS MAIER, Oak Ridge National Laboratory — Observation of high temperature superconductivity in iron-based superconductors with a submerged hole band has attracted wide interest. A spin fluctuation mediated pairing mechanism has been proposed as a possible explanation for the high transition temperatures observed in these systems. Here we discuss the importance of the submerged band in the context of the gap symmetry. We show that the incipient band can lead to an attractive pairing interaction and thus have significant effects on the pairing symmetry. We propose a framework to include the effect of the incipient band in the standard multi-orbital spin-fluctuation theories which are widely used for studying various iron-based superconductors.

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