Title:	Evidence of a pseudogap driven by competing orders of multi-band origin in the ferromagnetic superconductor Sr0.5Ce0.5FBiS2
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Abstract:	From temperature and magnetic field dependent point-contact spectroscopy on the ferromagnetic superconductor Sr0.5Ce0.5FBiS2 (bulk superconducting ${{T}_{\text{c}}}=2.5$ K) we observe (a) a pseudogap in the normal state that sustains to a remarkably high temperature of 40 K and (b) two-fold enhancement of Tc upto 5 K in the point-contact geometry. In addition, Andreev reflection spectroscopy reveals a superconducting gap of 6 meV for certain point-contacts suggesting that the mean field Tc of this system could be approximately 40 K, the onset temperature of pseudo-gap. Our results suggest that quantum fluctuations originating from other competing orders in Sr0.5Ce0.5FBiS2 forbid a global phase coherence at high temperatures thereby suppressing Tc. Apart from the known ordering to a ferromagnetic state, our first-principles calculations reveal nesting of a multi-band Fermi surface and a significant electron-phonon coupling that could result in charge density wave-like instabilities.
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