The Possibility of Phonon-Mediated Superconductivity in an Iron-Based Material SHEENA SHAH, ELENA ROXANA MARGINE, ALEKSEY KOLMOGOROV, University of Oxford — We have identified a synthesizable candidate FeB4 material with a potential for conventional superconductivity at 15-20 K [1,2]. The strong electron-phonon coupling in the proposed material is unexpected as the recently discovered iron-based superconductors are considered to display an unconventional pairing mechanism. The new nonmagnetic ground state crystal structure has been predicted with an ab initio evolutionary search [3] and shown to be marginally stable at ambient pressures.