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Coexistence of anti-ferromagnetism and anisotropic superconductivity in iron pnictides. JOSEPH NEWMAN, THEJA DE SILVA, Augusta University — By treating both anti-ferromagnetism (AFM) and superconductivity (SC) on an equal footing, we investigate the possible coexistence of AFM and SC of recently found high-temperature superconducting compounds. Assuming that the electron pairing is mediated by the spin fluctuations and using a mean-field theory, we derive a set of gap equations for both AFM and SC order parameters. In the spirit of the second order phase transition, we then linearize the gap equations using various base functions for superconducting order to include the different pairing symmetries. By analyzing the solution of our linearized equations, we then discuss the possible coexistence of AFM and anisotropic SC in these compounds.

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