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Excitonic codensation in quantum Hall electron-hole bilayers YOGESH JOGLEKAR, IUPUI, ALEXANDER BALATSKY, LANL — Bose-Einstein condensation of excitons in bilayers has been explored increasingly over the past decade. We present an effective theory of excitonic condensate phase in electron-hole systems in the quantum Hall regime and its derivation from a microscopic Hamiltonian using mean-field analysis. We present results for the critical layer separation d as a function of electron-layer filling factor ν_e, hole-layer filling factor ν_h, and interlayer bias voltage Δ_v. We extend our analysis to singlet and triplet excitons. We point out the salient differences between these systems and the (electron-electron) quantum Hall bilayers near total filling factor $\nu = 1$ which have been investigated experimentally in recent years.

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