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Supersolid of indirect excitons in electron-hole quantum Hall systems CHANG-HUA ZHANG, YOGESH N. JOGLEKAR, Indiana University–Purdue University Indianapolis — We investigate the ground state of a balanced electron-hole system in the quantum Hall regime using mean-field theory and obtain its phase diagram as a function of interlayer distance d and the filling factor within a layer. We identify an excitonic condensate phase, a supersolid phase, as well as uncorrelated Wigner crystal states. We find that balanced electron-hole system exhibits a supersolid ground state over a wide range of filling factors. We obtain the ground state stiffness in the the excitonic phases and show that the phase transitions from a uniform condensate to a supersolid is accompanied by a marked change in the stiffness. Our results provide the first semi-quantitative determination and analysis of the supersolid of excitons.

Chang-hua Zhang
Indiana University–Purdue University Indianapolis

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