

Indirect Excitons

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An indirect exciton is a bound pair of an electron and a hole confined in spatially separated layers. Long lifetimes of indirect excitons allow them to cool down to low temperatures below the temperature of quantum degeneracy. This gives an opportunity to study cold exciton gases. We will present spontaneous coherence and condensation, phase singularities, spatial ordering, and spin textures in a cold excitons gas [1, 2].

Indirect excitons are dipoles and their energy can be controlled by voltage. This gives an opportunity to create a variety of potential landscapes for indirect excitons and use them as a tool for studying the physics of excitons. We will present spontaneous coherence and condensation of excitons in a trap [3].

- [1] A.A. High, A.T. Hammack, J.R. Leonard, Sen Yang, L.V. Butov, T. Ostatnický, A.V. Kavokin, and A.C. Gossard, arXiv:1103.0321
- [2] A.A. High, J.R. Leonard, A.T. Hammack, M.M. Fogler, L.V. Butov, A.V. Kavokin, K.L. Campman, and A.C. Gossard, arXiv:1109.0253
- [3] A.A. High, J.R. Leonard, M. Remeika, L.V. Butov, M. Hanson, and A.C. Gossard, arXiv:1110.1337