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**Amplitude(Higgs) modes in two-dimensional spatially indirect exciton condensates** FEI XUE, Univ of Texas, Austin, FENGCHENG WU, Argonne National Laboratory, ALLAN MACDONALD, Univ of Texas, Austin — Higgs modes in condensed matter physics have drawn attentions in recent years because of close analogies that can be made in many cases to Higgs bosons that have been discovered in particle physics. Here we use a microscopic time-dependent mean-field theory to study the collective mode spectra of two-dimensional spatially indirect exciton (electron-hole pair) Bose condensates. We apply linear response theory to identify a number of collective modes with a strong electron-hole pairing amplitude(Higgs-like) component. In the BEC limit, the Higgs-like excitations correspond to removing an exciton from the condensate and exciting it to a higher energy bound-pair state. We will discuss the relationship of this finding to the literature on Higgs-like excitations of superconductors.

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