

TITLE: Microscopic theory of exciton-polaritons

Parish, Meera^{1,*}

¹*School of Physics and Astronomy, Monash University, Melbourne, Australia*

**e-mail: meera.parish@monash.edu*

We present a microscopic description of exciton-polaritons that involves electrons, holes and photons within a two-dimensional microcavity. Our approach goes beyond previous work and allows us to describe the effect of the light-matter coupling on the exciton wave function. We will also explore the high-excitation regime of the microcavity, where there is the prospect of realizing a BCS state of overlapping electron-hole pairs.