Bound states of three- body particles (charged exciton) in a system of three perpendicular quantum wires MARCELO DEL CASTILLO-MUSSOT, JAIME BESPROSVANY, J. ADRIAN REYES, Instituto de Fisica, UNAM — Advances in the fabrication of low-dimensional structures motivate the investigation of particular configurations. We study a three- body quasiparticle system made of three semiconducting quantum wires (QW) which are all perpendicular among them. There is only one quasiparticle confined in each QW and we are interested in calculating the bound states of the system when two of the quasiparticles are holes (light or heavy) and one is an electron, and when two are electrons and one is a hole. When the tranverse confinement in each QW is harmonic we obtain an analytical expression for the effective Coulomb interaction. We use a variational approach to find the groundstate energy and wave function for different values of the QW thicknesses and quasiparticle effective masses.

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