Rashba spin-splitting in wurtzite based two dimensional holes systems ARTURO WONG-LOPEZ, FRANCISCO MIRELES, Centro de Ciencias de la Materia Condensada-UNAM — We present a theoretical study of the Rashba-like spin-orbit coupling in two dimensional hole systems formed in wurtizite semiconductor heterostructures. Using an 8X8 band Kane model within the envelope function approximation we derive exact analytical expressions for the Rashba-like Hamiltonians of the heavy and light holes. The linear and cubic dependence in the wave vector of such Hamiltonians will be discussed. Simple analytical expressions for the spin-orbit coupling parameters can be also extracted from our model. A variational approach has been used in order to estimate the hole spin-splitting energies in typical group III nitrides semiconductor quantum wells. These results could be of relevance for the design and implementation of novel (hole) transport spintronic devices.

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