

S1-4.23**Two-dimensional Cavity Polaritons Under the Influence of the Landau Quantization, Rashba Spin-orbit Coupling and Zeeman Splitting**S.A. Moskalenko¹, I.V. Podlesny¹, E.V. Dumanov¹, M.A. Liberman² and I. Lelyakov¹¹*Institute of Applied, Chisinau, Republic of Moldova*²*Nordita, KTH Royal Institute of Technology and Stockholm University, Stockholm, Sweden*

The properties of the two-dimensional cavity polaritons subjected to the action of a strong perpendicular magnetic and electric fields, giving rise to the Landau quantization (LQ) of the 2D electrons and holes accompanied by the Rashba spin-orbit coupling, by the Zeeman splitting and by the nonparabolicity of the heavy-hole dispersion law were investigated. Our results are based on the exact solutions for the eigenfunctions and for the eigenvalues of the Pauli-type Hamiltonian with third order chirality terms for heavy-holes and with first order chirality terms for electrons. They were obtained using the method proposed by Rashba [1]. We predict the drastic changes of the optical properties of the cavity polaritons. The main of them are related with the existence of a multitude of the polariton energy levels nearly situated on the energy scale, their origin being related with the LQ of the electrons and holes. Most of these levels have the nonmonotonous dependences on the magnetic field strength B with overlapping and intersections.