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**Exact Landau Levels in Two-Dimensional Electron Systems with Rashba and Dresselhaus Spin-Orbit Interactions in a Perpendicular Magnetic Field** DEGANG ZHANG, C.S. TING, Texas Center for Superconductivity, University of Houston, Houston, TX 77204, C.-R. HU, Department of Physics, Texas A&M University, College Station, TX 77843 — We study a two-dimensional electron system in the presence of both Rashba and Dresselhaus spin-orbit interactions in a perpendicular magnetic field. Defining a suitable boson operator and using the unitary transformations we are able to obtain the exact Landau levels in the range of all the parameters. When the strengths of the Rashba and Dresselhaus spin-orbit interactions are equal, the Zeeman and spin-orbit splittings are independent of the Landau level index  $n$ . Due to the Zeeman energy, new crossing between the eigenstates  $|n, k, s = 1, \sigma\rangle$  and  $|n + 1, k, s' = -1, \sigma'\rangle$  is produced at certain magnetic field for larger Rashba spin-orbit coupling. This degeneracy leads to a resonant spin Hall conductance if it happens at the Fermi level.

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