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【103】Spin-orbitronics of wurtzite semiconductors

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Spin pumping is an efficient mechanism for the inception of spin current and for its conversion into charge current in non-magnetic metals or semiconductors via spin Hall effects. The generation of spin current in bilayers Py/n-GaN:Si is here reported. In n-GaN:Si and for a layer thickness greater than the spin diffusion length - a condition not met in previous studies on e.g. n-ZnO - a spin Hall angle θSH = 3.03 × 10−3 is found, exceeding by one order of magnitude those of other relevant semiconductors, and pointing at wurtzite nitride compounds as efficient spin current generators.

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