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Electronic transport through InGaN heterojunctions[1]

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— InGaN nanowires have recently sparked great interest for their high tunability and potential in applications like solid-state lighting (LEDs) and concentrated photovoltaics. Determination of device characteristics from first principles modeling is of great importance. In order to treat quantum transport properties of nanoelectronic devices with atomistic disorder, a non-equilibrium vertex correction (NVC) theory was recently developed and implemented into the Keldysh non-equilibrium Green's function (NEGF) -based density functional theory (DFT). NEGF-DFT-NVC enables the representation of disordered structures such as the InGaN heterojunction under non-equilibrium conditions. Electronic and transport properties of a InGaN heterojunction are investigated using this accurate ab initio method.

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