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Multi-channel impurity scattering effects on the carrier mobility in semiconductor nanowires KUNAL DAS, ARI MIZEL, The Pennsylvania State University — We consider the mobility of charged carriers in a semiconducting nanowire. The suppression of scattering phase space in small radius wires can enhance mobility. This can compete with an increased density of impurities and defects in the interior and surface of small radius wires that can decrease mobility. We study the dependence of these effects on wire radius, providing insight into the transition from bulk transport to effective one dimensional transport.

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