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Resistivity of the insulating phase approaching the 2D metal-insulator transition: the effect of spin polarization[1] SHIQI LI, MYRIAM SARACHIK, City College of New York — We compare the resistivity of the dilute, strongly-interacting 2D electron system in the insulating phase of a silicon MOSFET for unpolarized electrons in the absence of magnetic field and in the presence of an in-plane magnetic field sufficient to fully polarize the electrons. In both cases the resistivity obeys Efros-Shklovskii variable range hopping $\rho(T) = \rho_0 \exp[(T_{ES}/T)^{1/2}]$, with T_{ES} and $1/\rho_0$ mapping onto each other provided one applies a shift reported earlier of the critical density n_c with magnetic field: the transport properties of the insulator are the same for unpolarized and fully polarized electron spins. Interestingly, the parameters T_{ES} and $1/\rho_0 = \sigma_0$ are consistent with critical behavior approaching a metal-insulator transition.

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