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The spin susceptibility in Si-MOSFETs. MARIPIA MARCHI, Democritos-INFN and Universita' di Trieste, DE PALO STEFANIA, Democritos-INFN , SAVERIO MORONI, Democritos-INFN , GAETANO SENATORE, Democritos-INFN and Universita' di Trieste — We have performed for the first time DMC simulations of a symmetric two-valley electron gas with variable spin polarization, both in the strictly 2D limit and with a thickness appropriate to Si-MOSFETs. We find that valley degeneracy substantially reduces the spin susceptibility enhancement α , with respect to the conventional 2DEG. The farther reduction of α , caused by thickness, brings our prediction in excellent agreement with the available experimental data on Si-MOSFETs[1] up to $r_s \approx 5$. The agreement extends to the full experimental range ($r_s \leq 8$) when weak disorder is kept into account within a response function formalism, generalizing to the two valley system the approach previously employed for the conventional 2DEG [2]. [1] See, e.g, S.V. Kravchenko and M.P.Sarachik, Rep. Prog. Phys. **67**, 1 (2004) and references therein. [2] S. De Palo et. al., Phys. Rev. Lett. **94**, 226405 (2005).

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