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Spin Transfer from a Ferromagnet into a Semiconductor through an Oxide barrier CLODOALDO IRINEU LEVARTOSKI DE ARAUJO, MILTON ANDRE TUMELERO, ALEXANDRE DA CAS VIEGAS, Laboratorio de Filmes finos e Superficies (LFFS), Universidade Federal de Santa catarina, NICOLAS GARCIA, Laboratorio de Fisica de Sistemas Pequenos y Nanotecnología, Consejo Superior de Investigacione Cientificas (CSIC), ANDRE AVELINO PASA, Laboratorio de Filmes finos e Superficies (LFFS), Universidade Federal de Santa catarina — We present results on the magnetoresistance of the system Ni/Al203/n-doped Si/Al2O3/Ni in fabricated nanostructures. The results at temperature of 14K reveal a 75% magnetoresistance that decreases in value up to approximately 30K where the effect disappears. We observe minimum resistance in the antiparallel configurations of the source and drain of Ni. As a possibility, it seems to indicate the existence of a magnetic state at the Si/oxide interface. The average spin diffusion length obtained is of 650 nm approximately. Results are compared to the window of resistances that seems to exist between the tunnel barrier resistance and two threshold resistances but the spin transfer seems to work in the range and outside the two thresholds.

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