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**Spin injection and imbalance in ferromagnet/ superconductor/ ferromagnet double tunnel junctions.** HYUNSOO YANG, SEE-HUN YANG, STUAT PARKIN, IBM Almaden research center — The interplay between magnetism and superconductivity can be explored in double tunnel junctions (DTJs) with a superconducting (SC) middle electrode, CoFe/ MgO/ Al/ MgO/ CoFe, prepared using metal shadow masks and magnetron sputter deposition. Due to the strong competition between magnetism and superconductivity induced by the accumulation of spin polarized electrons in the SC, the superconducting gap is reduced with increasing bias voltage for anti-parallel alignment of the two ferromagnetic electrodes, as predicted theoretically [1]. We find that a large inverse (or negative) TMR is observed around gap energy and almost negligible TMR at zero bias. [1] S. Takahashi, H. Imamura, and S. Maekawa, Phys. Rev. Lett. **82**, 3911–3914 (1999).

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