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Nonlocal Spin Valves With Very Short Injector Detector Distances ANDREW MCCALLUM, MARK JOHNSON, Naval Research Laboratory — Nonlocal spin valves with a center to center distance of 42 nm between spin injector and detector have been fabricated. This distance is much less than the injector detector spacing in previously made nonlocal spin valves and is much shorter than the spin diffusion length of the Cu used as a channel. Nonlocal resistance changes of up to 2.6 $m\Omega$ were seen in these devices at room temperature. From this data it was determined that the average spin polarization of the ferromagnetic interfaces is between 4.3% and 5.9% at room temperature. The nonlocal resistance changes of these devices are much less sensitive to changes in temperature, as determined by measurements at liquid nitrogen temperature, than nonlocal spin valves with longer injector detector distances.

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