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Abstract of the Disclosure

An improved spin valve (SV) magnetoresistive element has its free ferromagnetic layer in the form of a central active region with defined edges and end regions that are contiguous with and abut the edges of the central active region. A layer of antiferromagnetic material, preferably a nickel-manganese (Ni-Mn) alloy, is formed on and in contact with the ferromagnetic material in the end regions for exchange coupling with the end regions to provide them with a longitudinal bias of their magnetizations. The pinned ferromagnetic layer in the SV element is pinned by exchange coupling with a different layer of antiferromagnetic material, preferably an iron-manganese (Fe-Mn) alloy. This material has a substantially different Neel temperature from that of the antiferromagnetic material on the end regions. The process for making the SV element includes heating to different predetermined temperatures in the presence of an applied magnetic field to orient the magnetizations of the free and pinned layers in the proper direction. The SV element may be used as a sensor for reading data in magnetic recording systems.

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