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ABSTRACT

MAGNETORESISTIVE SENSOR

A magnetoresistive read sensor based on the spin valve effect in which a component of the read element resistance varies as the cosine of the angle between the magnetization directions in two adjacent magnetic layers is described. The sensor read element includes two adjacent ferromagnetic layers separated by a nonmagnetic metallic layer. A layer of antiferromagnetic material is formed over one of the ferromagnetic layers to provide an exchange bias field which fixes or "pins" the magnetization direction in the one ferromagnetic layer. An interlayer of magnetically soft material is deposited between the ferromagnetic and antiferromagnetic layers separating the ferromagnetic layer from the antiferromagnetic layer and enhancing the exchange coupling, particularly in the instance where the ferromagnetic material is iron or an iron alloy.