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Spin polarization in half-metallic ferromagnets M. BIASINI, ENEA, Bologna, A.P. MILLS, JR., UC, Riverside, Phys. Dept. CA 92521 — Ferromagnetic contacts for spin injection and analysis are key components determining the performance of spintronic devices. For practical applications the materials for these contacts should have a high electron spin polarization at the Fermi surface (FS) at room temperature. We need to develop suitable new high Curie-temperature ferromagnets from the class of half metallic compounds that are theoretically ideal for spintronics [1]. We point out that a polarized slow positron probe combined with the two-dimensional angular correlation of annihilation radiation (2D-ACAR) technique [2] would allow unambiguous, direct, room-temperature determinations of the spin polarization of the conducting electrons at the FS of important candidate spintronic ferromagnetic thin films and single crystals. The electron spin polarization at the FS may be deduced directly from the amplitudes of the discontinuities in the electron occupation number at the Fermi momentum for two directions of the polarization of a positron probe relative to the saturating magnetic field direction [3]. Work supported in part by NSF grants DMR 0216927 and PHY 0140382 and by DOD/DARPA/DMEA, Award DMEA90-02-2-0216.

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