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**Effect of thermal spin disorder on transport through magnetic tunnel junctions** ALEKSANDER WYSOCKI, KIRILL BELASHCHENKO, Department of Physics and Astronomy, University of Nebraska Lincoln — We study the transport properties of $Fe_{1-x}Co_xMgOFe_{1-x}Co_x$ magnetic tunnel junction in the presence of spin disorder using the noncollinear density functional theory. For a given temperature the spin disorder in ferromagnetic leads is introduced by randomizing the directions of spin densities in atomic spheres according to the mean-field angular distribution function. For pure FeMg0Fe we found that even small spin disorder has a dramatic effect on transmission as compared to the zero temperature case due to the presence of interface states in the minority spin channel that are strongly affected by spin disorder. This results in a complicated temperature dependence of the tunneling magnetoresistance (TMR). On the other hand, in the case of $Fe_{1-x}Co_xMgOFe_{1-x}Co_x$ the interface states are less important and the main effect of the spin disorder is to decrease the spin polarization diminishing TMR. The temperature dependence of TMR is in agreement with Julliere model prediction with the spin polarization being proportional to magnetization.

Aleksander Wysocki
Department of Physics and Astronomy, University of Nebraska Lincoln

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