Relativistic LMTO theory of electron transport in random alloys

Ilja Turek^{a,b}, Josef Kudrnovský^c and Václav Drchal^c

 ^a Institute of Physics of Materials, Academy of Sciences, Brno, Czech Republic
^b Department of Condensed Matter Physics, Charles University, Prague,

Czech Republic ^c Institute of Physics, Academy of Sciences, Prague, Czech Republic *e-mail:* turek@ipm.cz

Transport properties of itinerant magnets are of general importance in solidstate physics, in particular for spintronic applications. This contribution reviews briefly the implementation of the Kubo-Středa formula for the conductivity tensor in the relativistic tight-binding LMTO method. The developed technique is illustrated by recent applications to selected ordered and disordered alloy systems. Special attention will be paid to the following phenomena: the anomalous Hall effect and its anisotropy, the anisotropic magnetoresistance and its temperature dependence, and the spin-disorder resistivity.