Ab-initio theory of current induced switching PETER WEIN-
BERGER, ANDRAS VERNES, CMS, TU Vienna, Austria, LASZLO SZUNYOGH,
TU Budapest, Hungary, BALAZS L. GYORFFY, U Bristol, UK — Current induced
switching in Co/Cu/Co and Py/Cu/Py trilayers is described in terms of ab-initio de-
termined magnetic twisting energies and corresponding sheet resistances. In viewing
the twisting energy as an energy flux the characteristic time thereof is evaluated by
means of the Landau-Lifshitz-Gilbert equation using ab-initio parameters. The ob-
tained switching times are in very good agreement with available experimental data.
It is found that the magnetoresistance viewed as a function of the current is essen-
tially determined by the twisting energy as a function of the relative angle between
the orientations of the magnetization in the magnetic slabs. For all ab-initio type
calculations the fully relativistic screened Korringa-Kohn-Rostoker method and the
corresponding Kubo-Greenwood equation in the context of density functional theory
are applied.

Peter Weinberger
CMS, TU Vienna, Austria