

**Timothy Ziman**

ILL, Grenoble, France

*Skew Scattering from Correlated Systems*

I will discuss the skew scattering mechanisms underlying extrinsic mechanisms for the anomalous and spin Hall effects. First I will recall the phase shift analysis of scattering by single impurities and discuss the difficulty of finding the strong skew effects needed for spintronics. I will then examine the enhancement in the effect caused by resonant skew scattering induced by electron correlations. For single-impurity scattering, local Coulomb correlations may significantly change the observed spin Hall angle. There may be additional effects because of the special atomic environment close to a surface - extra degeneracies compared to the bulk, enhanced correlations that move the relative d - or f- levels, and interference effects coming from the lower local dimension. These results may explain the very large spin Hall angle observed in CuBi alloys. I also discuss the impact on the spin Hall effect from cooperative effects, first in itinerant ferromagnets where there is an anomaly near the Curie temperature originating from high-order spin fluctuations.

The second case considered is a metallic spin glass, where exchange via slowly fluctuating magnetic moments may lead to the precession of an injected spin current. This can decrease the net spin-charge conversion from skew scattering at low temperatures