

SERVICE DE METROLOGIE NUCLEAIRE

PARTICLES-MATTER INTERACTIONS: Surface analysis

1. Interface effect in surface analysis

N. Pauly (nicolas.pauly@ulb.be)

When an electron crosses an interface between two different media, it undergoes an energy loss depending on its initial energy, on the angle of its trajectory with respect to the interface and on the considered media. Moreover its mean free path is modified. The goal of this work consists in the calculation of the probability of interface excitation between the 2 media and in the calculation of the variation of the mean free path close to the interface. Finally, these results will be applied to a complex structure made in several thin layers of various media. Indeed this morphology is particularly used in the development of power and memory nanodevices.

The student will first acquire basic concepts of surface analysis. Indeed, the theory behind the Master Thesis has already been established in the department of Métrologie Nucléaire. Then she/he will develop her/his own software to perform the calculations of surface excitations and of inelastic mean free paths.