G10

MODELLING, CALIBRATION AND ERRORS OF γ- AND n-GAUGES

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Gauges

γ- and n-gauges are almost totally independent of temperature and chemical bindings of the elements of matter.

Modelling

neutron transport

EQUATIONS

for n-importance $\phi^*(r,\Omega,E)$

for n-flux $\phi(r,\Omega,E)$

E

Above the energy E the direct MC, i.e., the n-flux transport

Below the energy E the inverse MC, i.e., to calculate the n-importance or the probability to detect neutron

Kasi (1982) in his talk in Cambridge, England

RESPONSE (COUNTING RATE) of Gauge:

$$C = \int \Sigma_d \phi(r,\Omega,E)\,d\Omega\,dE\,dV_d = \int S(r,\Omega,E)\phi^*(r,\Omega,E)\,d\Omega\,dV$$

The energy E

The total H-cross-section of neutron interaction is mainly that of scattering.

Monte Carlo use

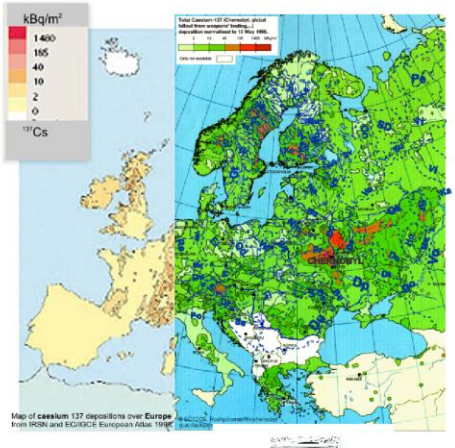
With MC can be performed very accurate calculations. More operational calibration models can be tested with it.

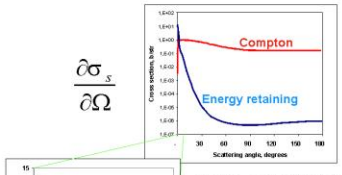
in γ-transport calculations, then the polarisation of photons must be considered.

In the (n,γ) gauge of chemical analysis the counting rate of source energy photons

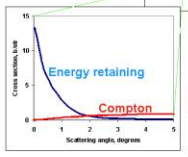
This photon mostly comes as a ray from the point of neutron reaction or fast neutron scattering.

TODAY





in Al of 662 keV



For angles (0...θ) the Klein-Nishina cross sections must be multiplied by S-value