

Some questions of the radiation weighting factor determination using silicon telescopes

Tamás Pázmándi, Edit Láng, Sándor Deme

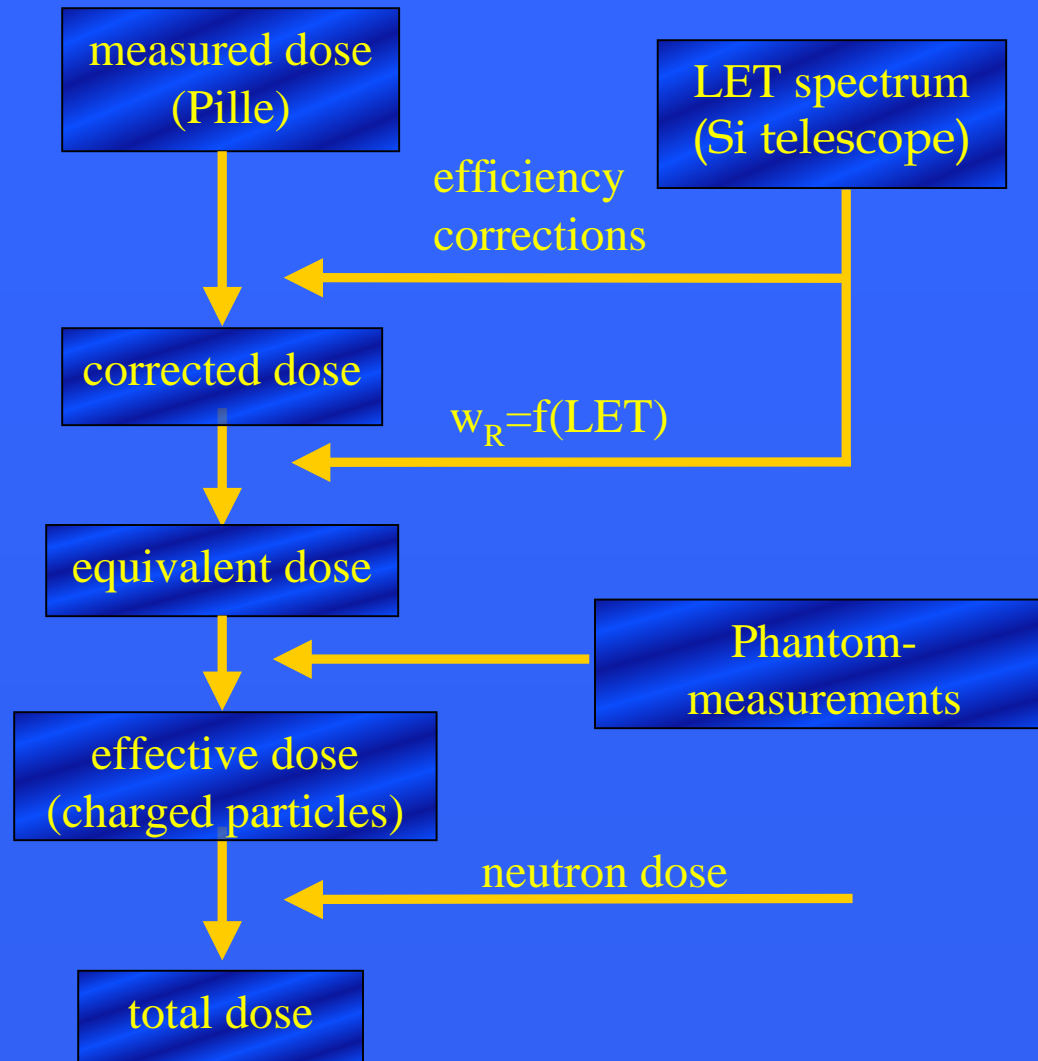


KFKI Atomic Energy Research Institute (AEKI)
Budapest, Hungary

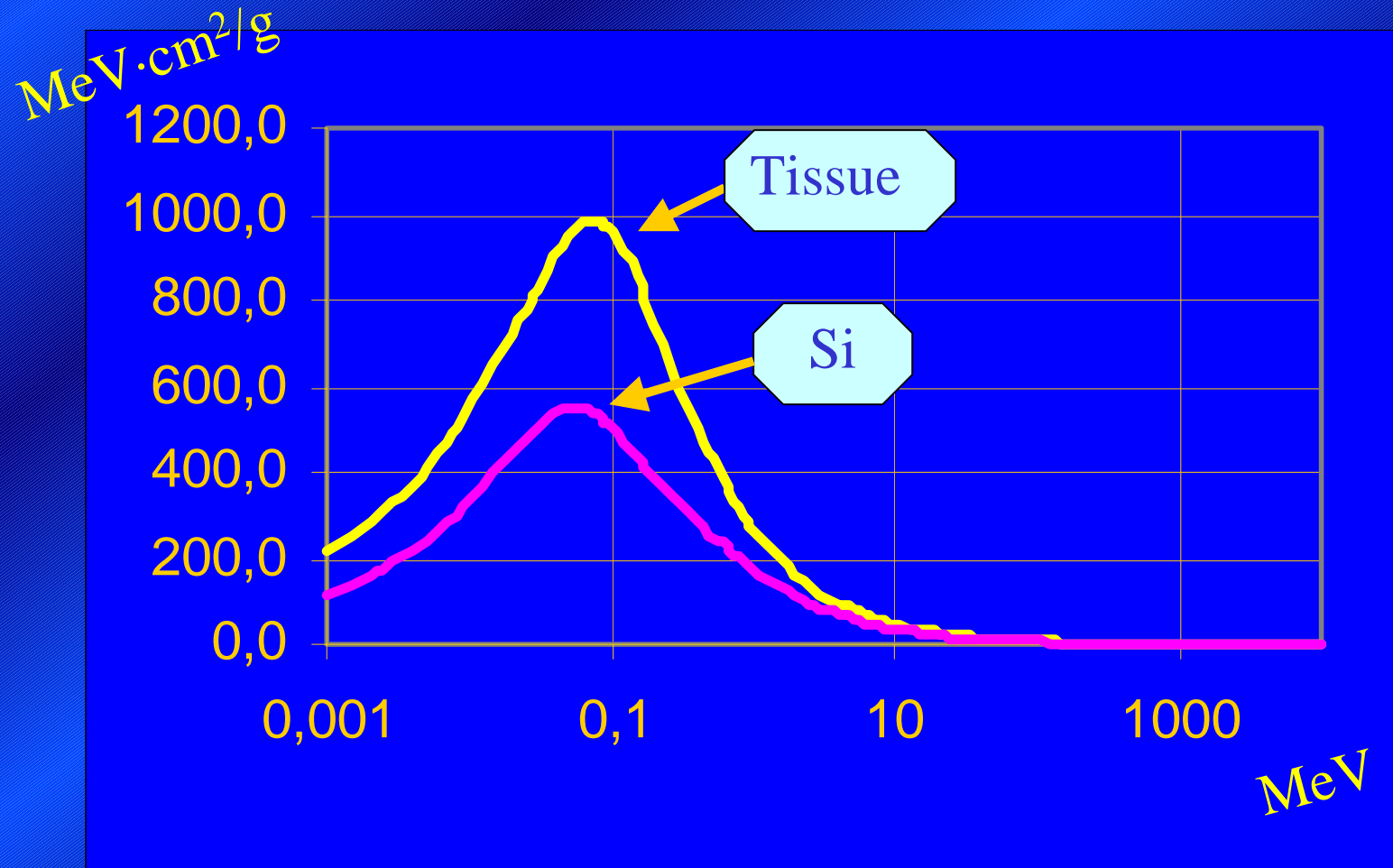
What am I going to talk about in this lecture?

- Method
- DOSTEL type 1D silicon linear energy transfer spectrometer
- results
 - geometric factor
 - the response function
- the future

Methods

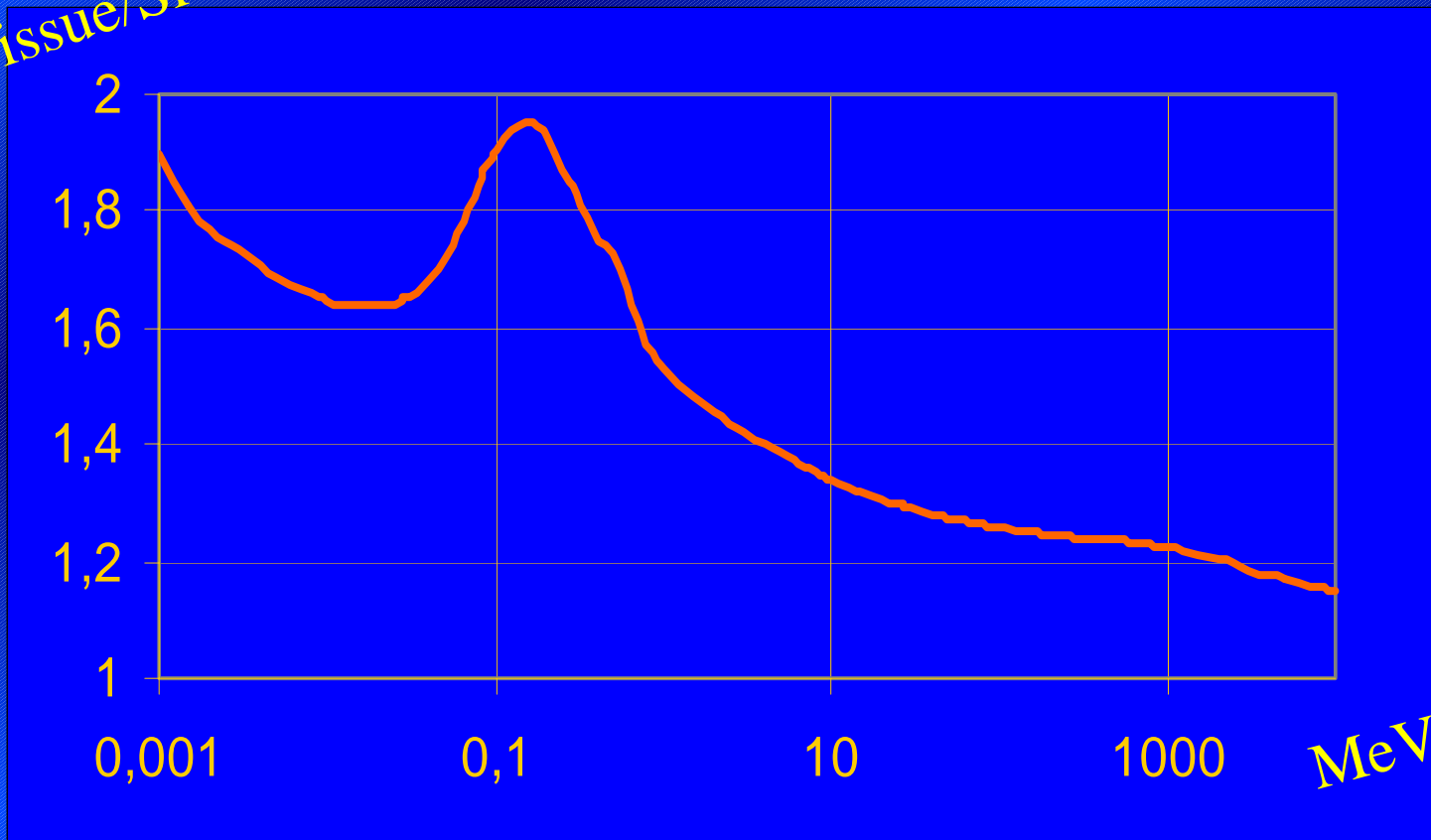


Correction



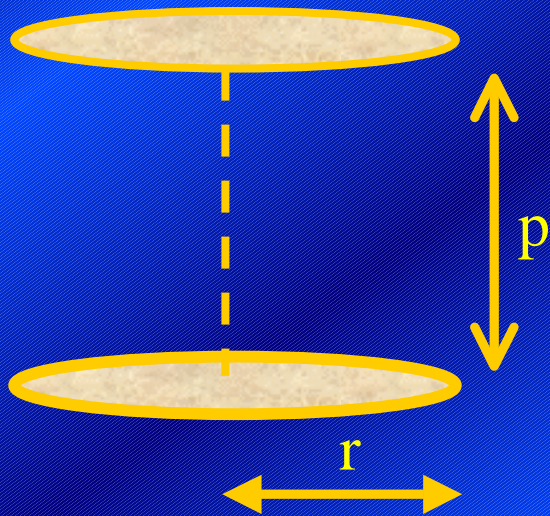
Correction

Tissue/Si



MeV

Geometry



- Silicon

- AND

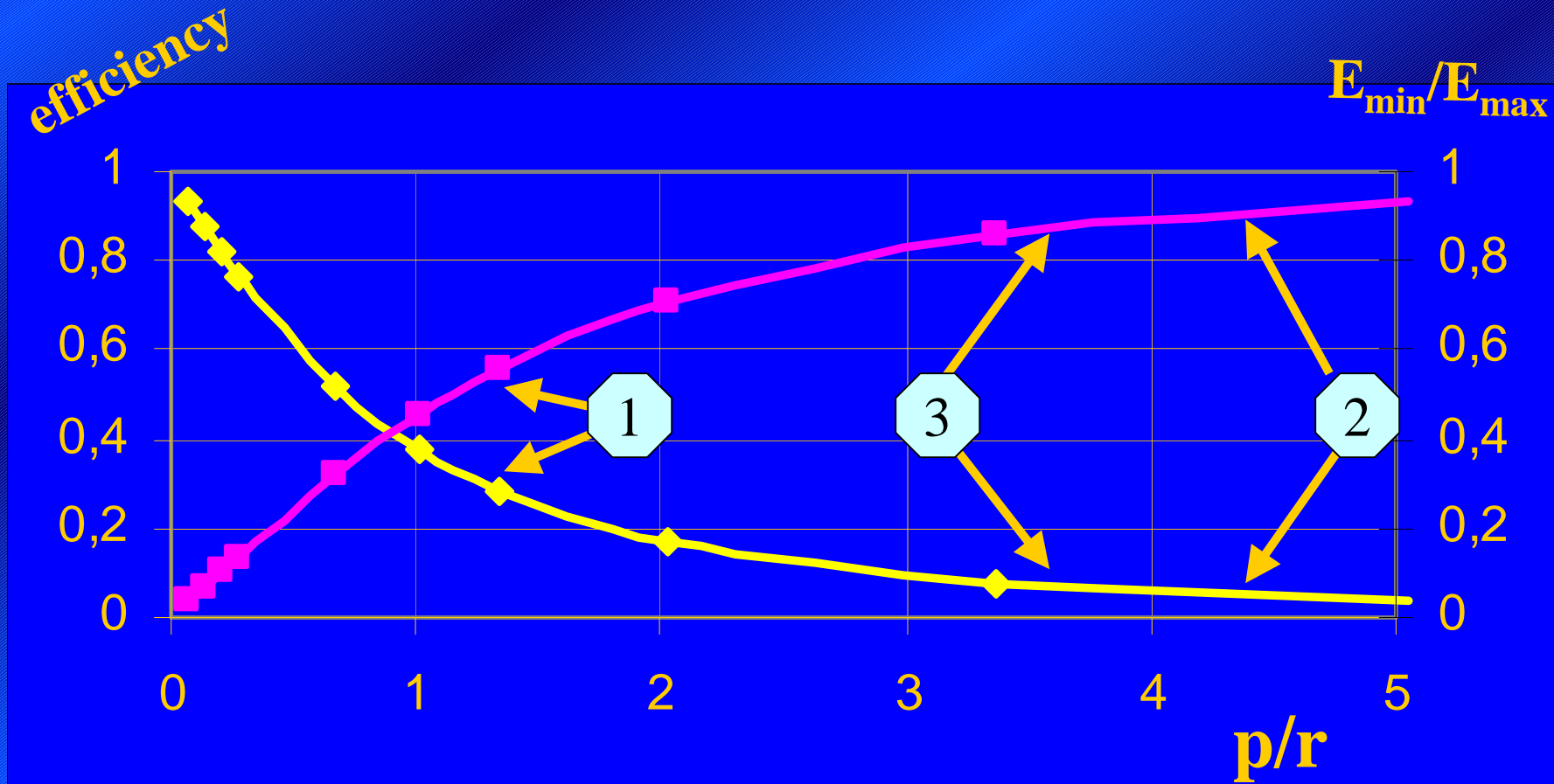
- 3D

The thickness of the silicon crystal:

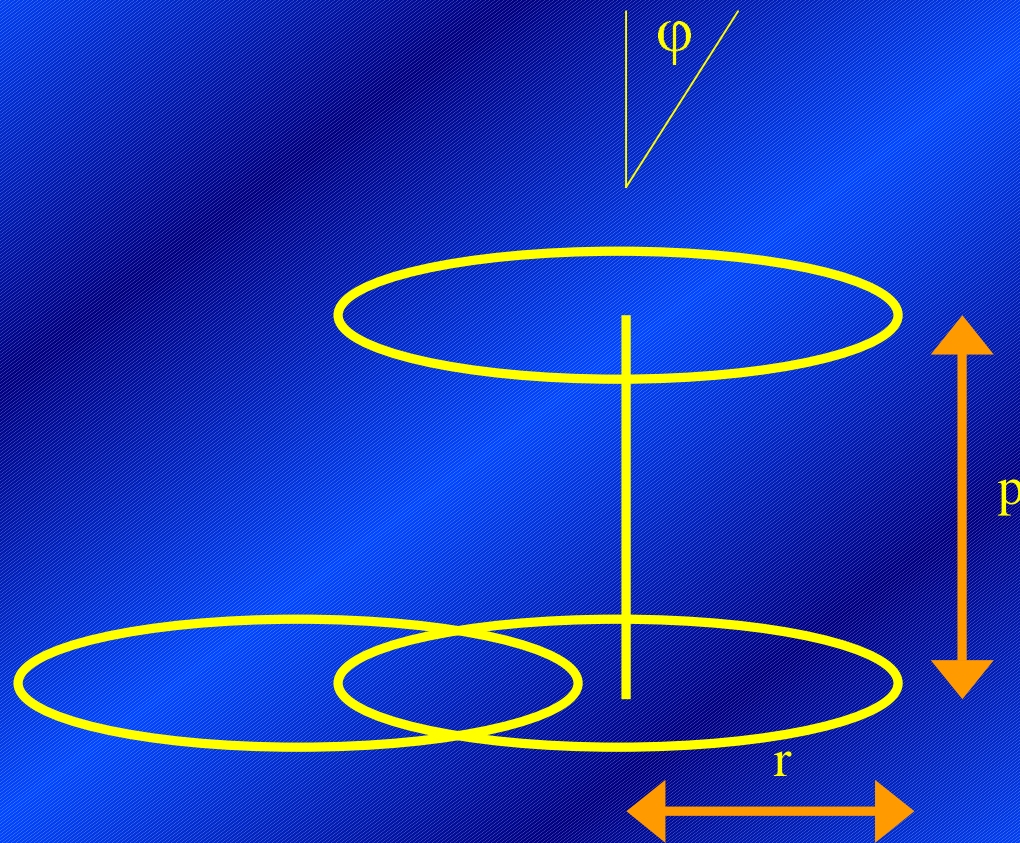
315 μm

surface (mm^2)	693	300	450
radius (r)	14,85	9,77	11,97
distance (p)	15	40,1	43,3
p/r	1,01	4,11	3,62

Efficiency



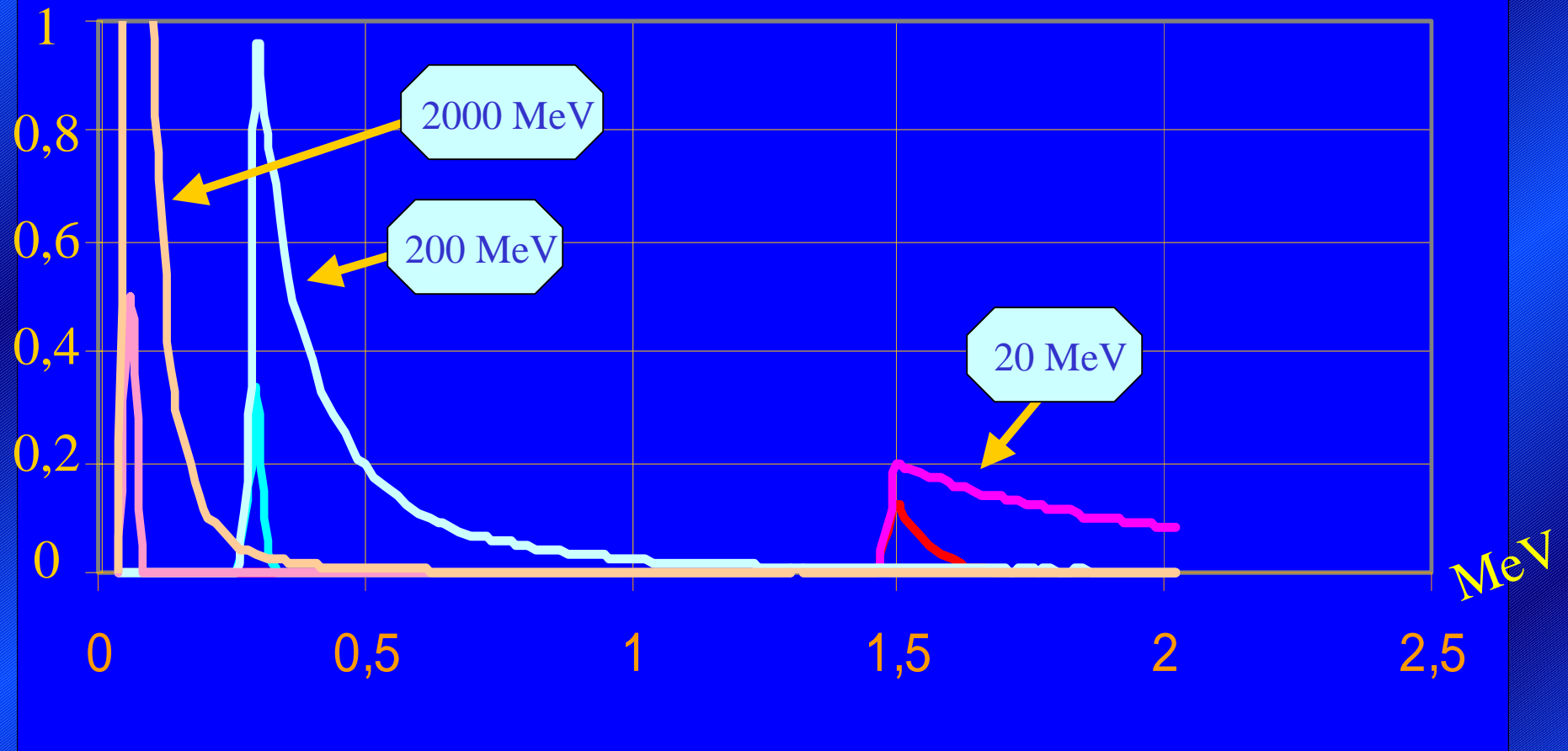
Geometric factor



8,24 cm²sr

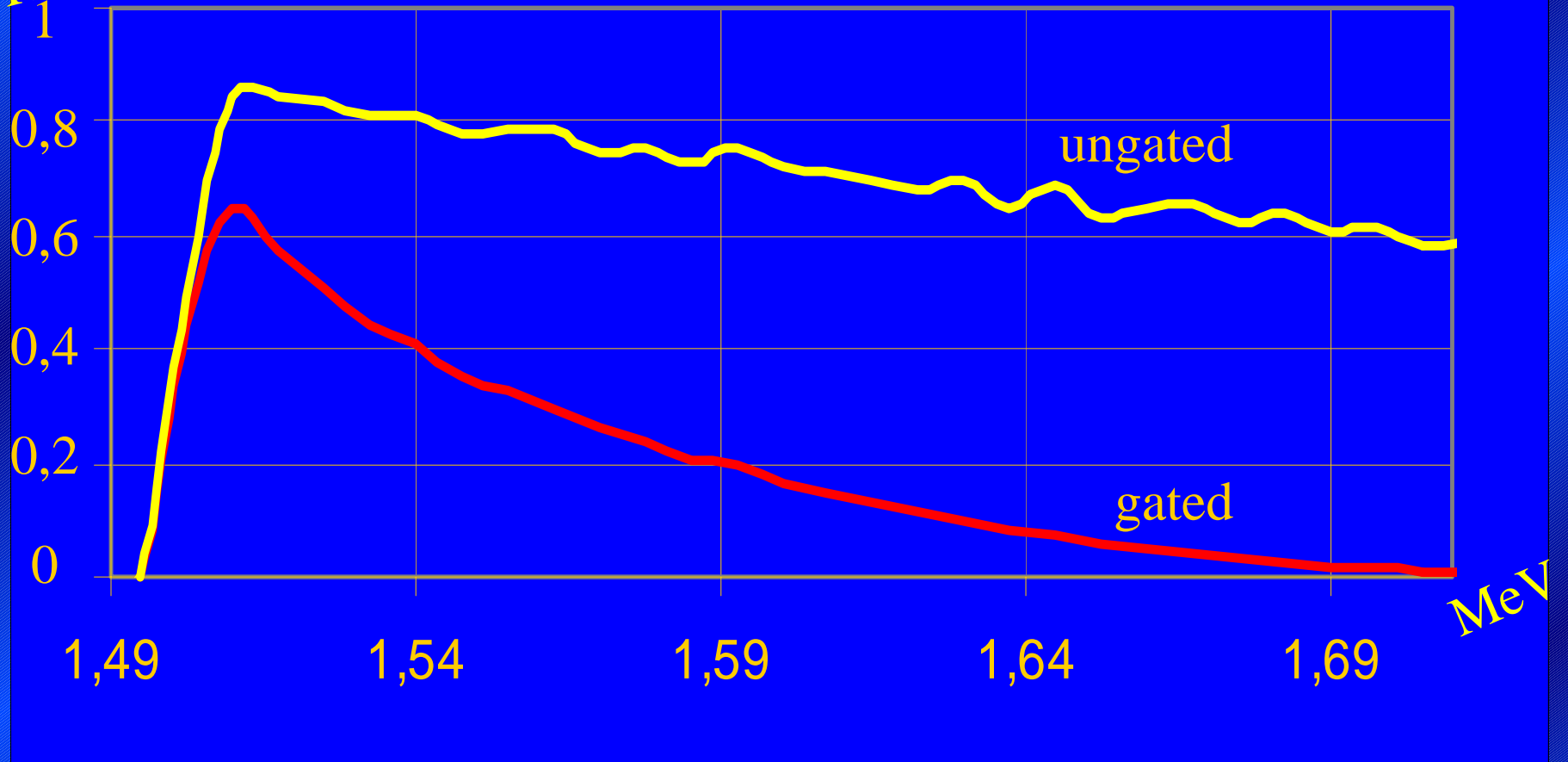
Response function

Relative Units



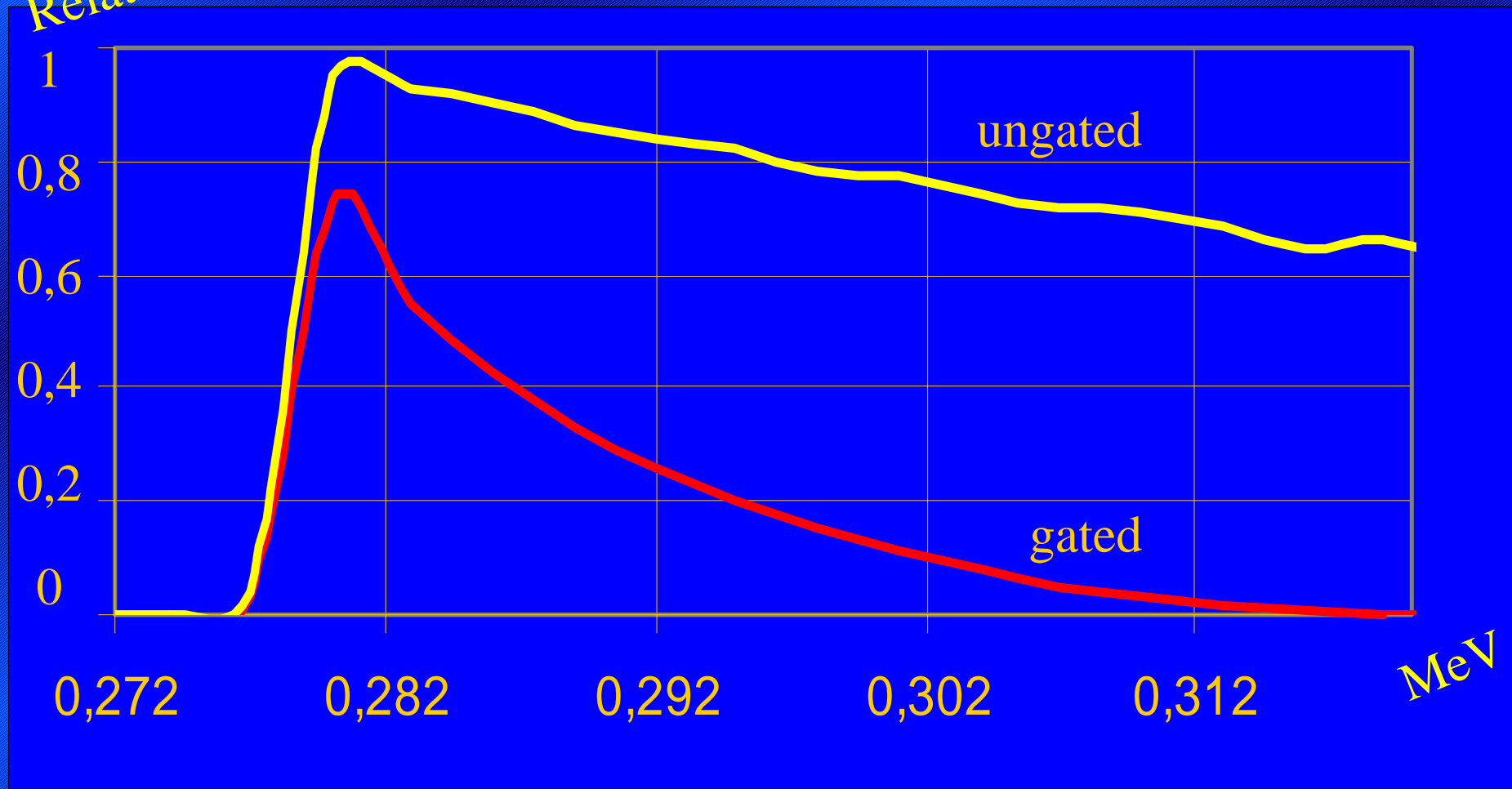
20 MeV

Relative Units



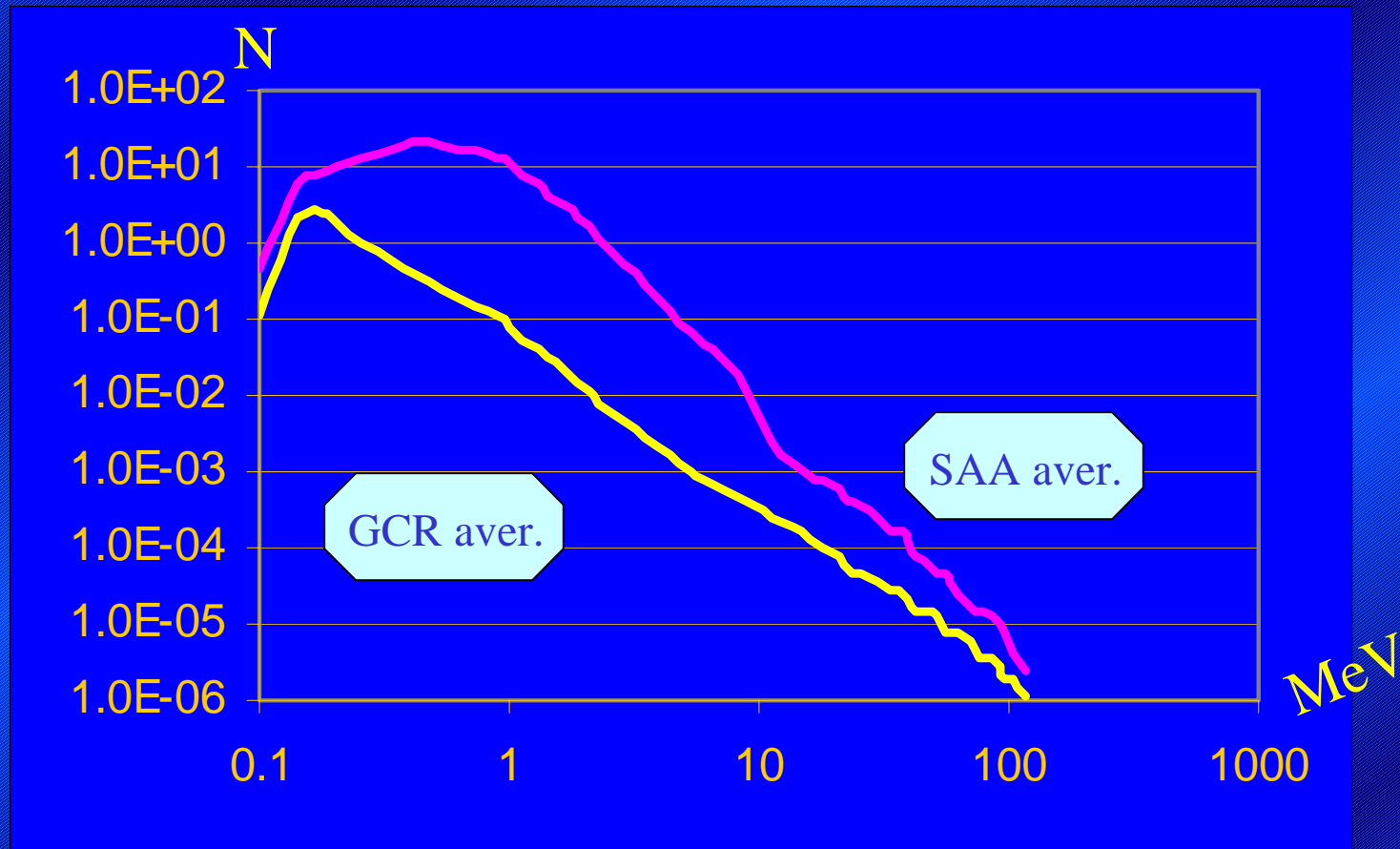
200 MeV

Relative Units

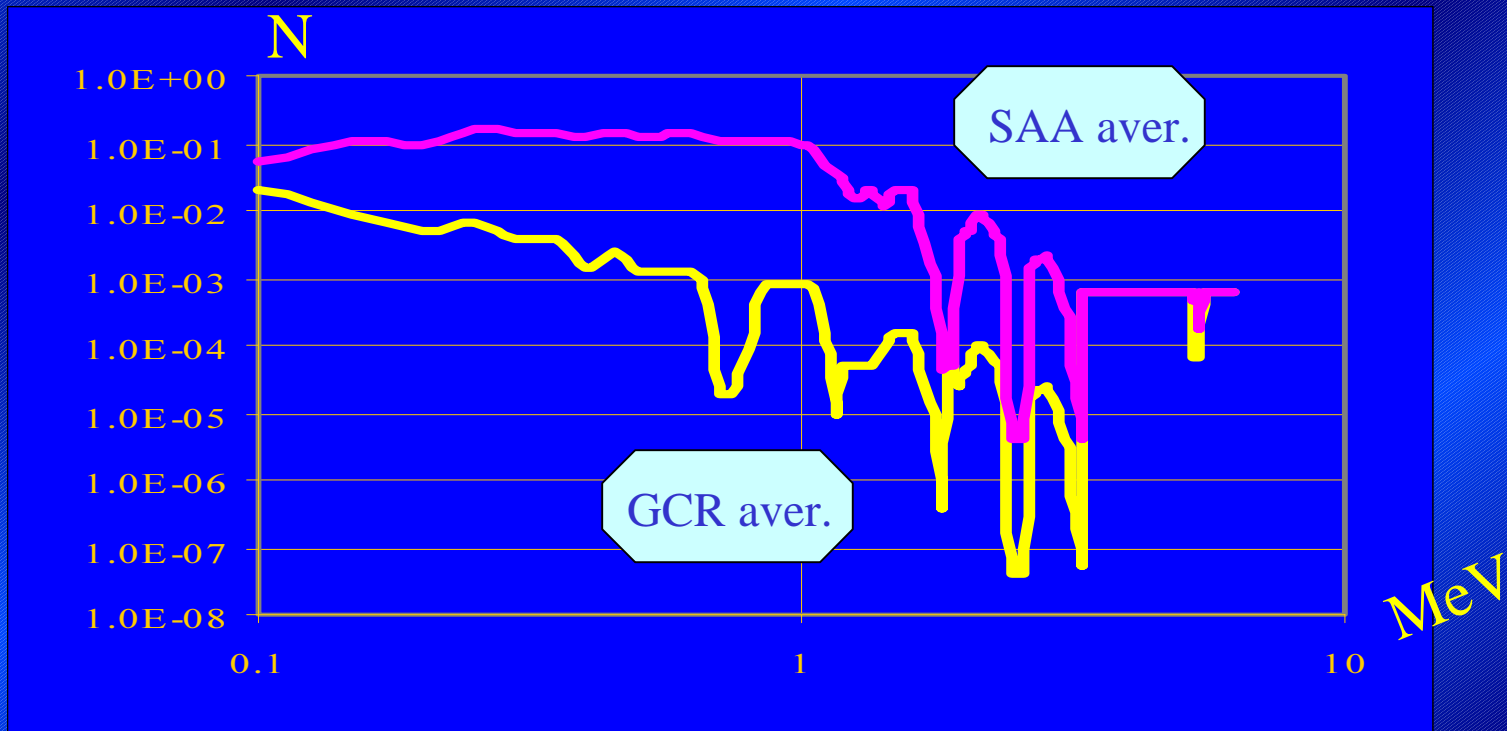


MeV

STS84 spectra



Response



Summary and the future

- field \rightarrow spectrum and spectrum \rightarrow field
 - „realistic” field
 - statistical error - optimization
 - change of LET along particle track
 - particles below “critical” energy
 - 3D geometry
 - directional flux (SAA) - count rate gating
-
- ??? (flight opportunities/cooperation, etc.)