Examples of FLUKA Applications



Example: 3 Primary Collimators IR7



Studies of the radiation damage to the LHC copper collimators



Estimated number of DPA per incident proton (beam size ~ accident case) on a copper jaw

Applications - CNGS





Alghero, June 2011

G. Battistoni

An high energy E-M example



CERN-EU High-Energy Reference Field facility (CERF)



Thermo-Eberline dose-meter FHZ 672



Iron



samples in contact with a 50 cm long, 7 cm diameter copper target, centred on the beam axis

Alghero, June 2011



CERF particle spectra



(3D) Calculation of Atmospheric v Flux



Sub-GeV flux at Kamioka

The first 3-D calculation of atmospheric neutrinos was done with FLUKA.

The enhancement in the horizontal direction, which cannot be predicted by a 1-D calculation, was fully unexpected, but is now generally acknowledged.

In the figure: angular distribution of v_{μ} , $\overline{v}_{\mu,\mu}$, v_{e} , \overline{v}_{e} .

In red: 1-D calculation

Negative muons at floating altitudes: CAPRICE94





10-12

10-14

10-10

10-6

(GeV)

10-4

10-8

Е

10⁰

 10^{2}

10⁻²

Dosimetry Applications



Ambient dose equivalent from neutrons at solar maximum on commercial flights from Seattle to Hamburg and from Frankfurt to Johannesburg.

Solid lines: FLUKA simulation



The TARC experiment at CERN:



The TARC experiment: neutron spectra

FLUKA + EA-MC (C.Rubbia et al.)

