

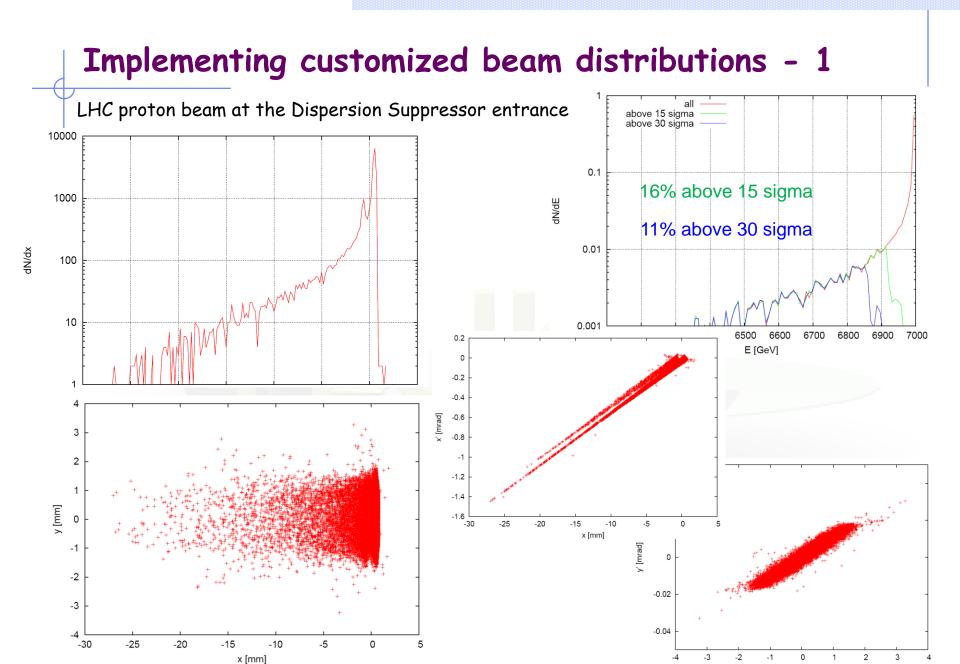
Highlights on advanced topics

Beginners' FLUKA Course

This is not the end ...

- As said in the first day, most applications can be run through data-cards only, exploiting the FLUKA built-in capacities
- Sometimes, more is needed...
- A set of templates User Routines is provided in the \$FLUPRO/usermvax directory
- These can be modified by the user to fit his input/output needs
- We'll give here some hints of what can be done, more can be found in the manual, in the fluka-discuss archive, or

at the FLUKA (workshop and) advanced course planned for 2012



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y [mm]

Implementing customized beam distributions - 2

Input card: SOURCE

User routine: **\$FLUPRO/usermvax/source.f** to be linked in one's own executable !

In source.f

you can sample beam particle position, direction, and energy from an external file or any (analytic or numerical) distribution

you can assign different weights to primary particles

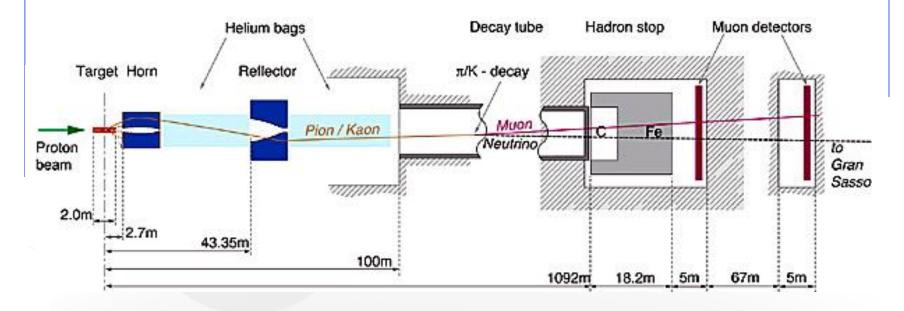
you can load reaction products in the same primary history (but note that colliding beams can already be managed through SPECSOUR)

parameters input in the SOURCE card are available

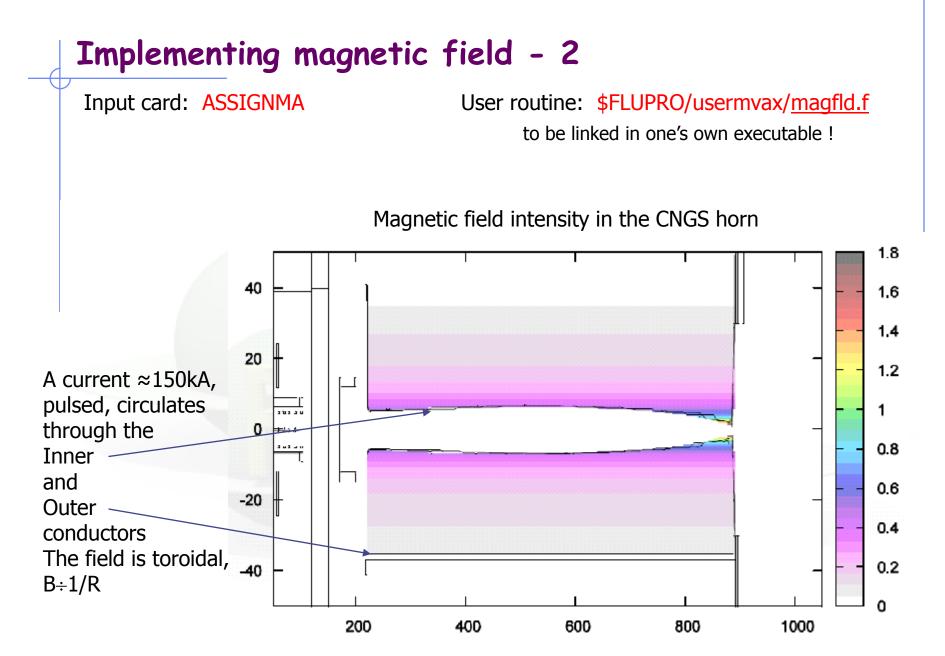
a BEAM card with a momentum/energy higher than the maximum one is still needed for initialization purposes (to define the tabulation limit)

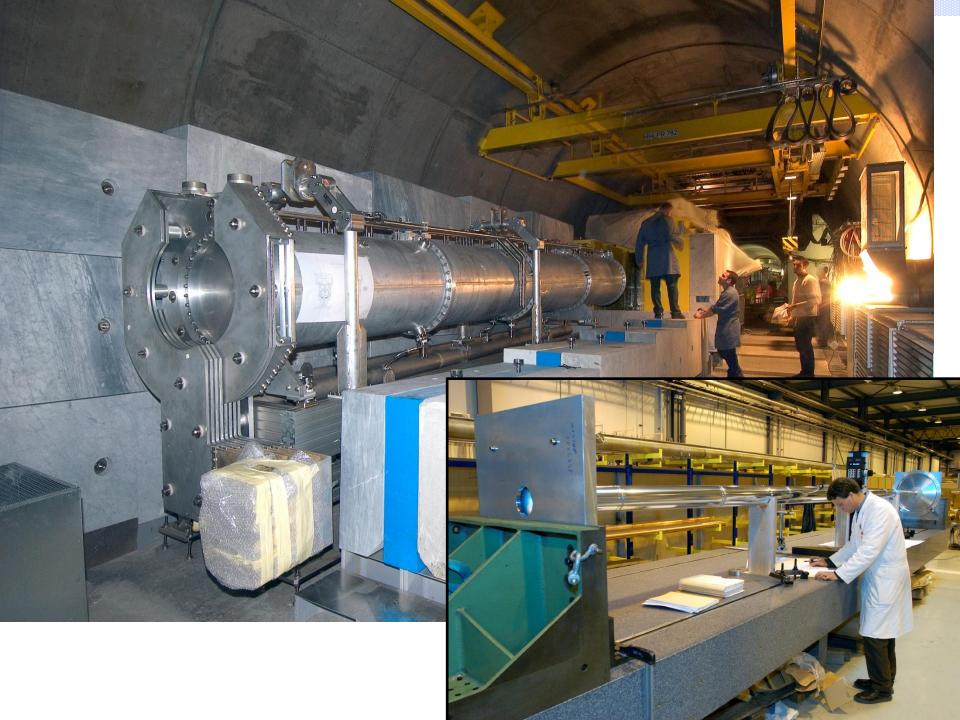
Implementing magnetic field - 1

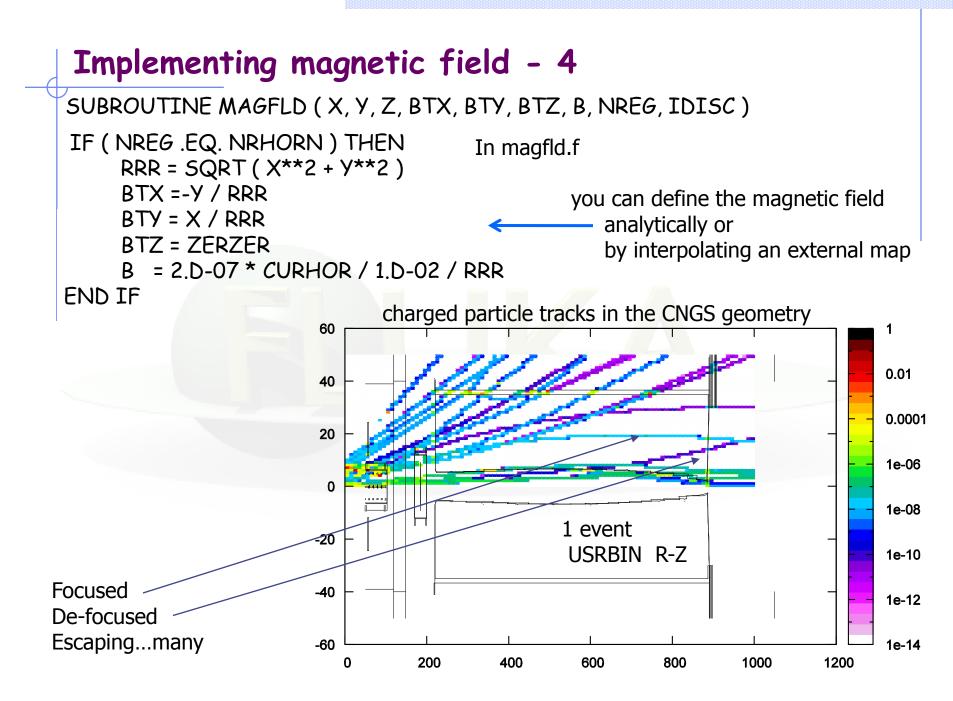
CERN Neutrino to Gran Sasso



The two magnetic lenses (blue in the sketch) align positive mesons towards the Decay tunnel, so that neutrinos from the decay are directed to GranSasso, 730~km away Negative mesons are deflected away The lenses have a finite energy/angle acceptance

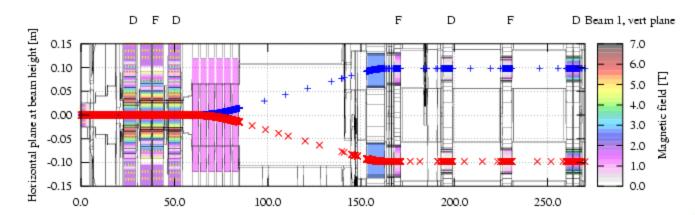




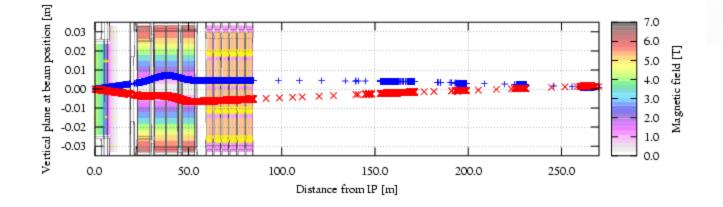


Implementing customized scoring - 1

beam crossing in ATLAS



complete geometry - vertical crossing scheme



Implementing customized scoring - 2

Input card: USERDUMP

User routine: **\$FLUPRO/usermvax/mgdraw.f** to be linked in one's own executable !

In mgdraw.f

you can get particle trajectories and (continuous and local) energy losses

you can go over reaction products

you can access information at each boundary crossing, particle step, energy deposition event, *interaction*

In mdstck.f (for which no activating card is needed) as well, with the additional – dangerous – possibility of influencing the subsequent transport of secondaries

Implementing customized scoring-3

Input card: USERWEIG

User routines: \$FLUPRO/usermvax/comscw.f \$FLUPRO/usermvax/fluscw.f

to be linked in one's own executable !

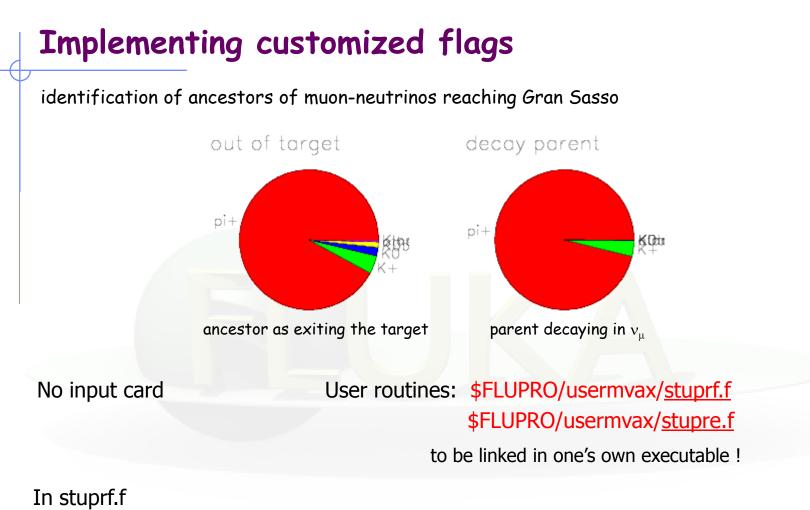
In comscw.f

you can apply a user defined weight (even discard) on deposited energy, stars or residual nuclei

you can extract information (and dump it on a file) about the involved particles

In fluscw.f

same as comscw.f for fluence scoring



you can keep track of the particle origin

stupre.f applies in case of electrons, photons and positrons