



Exercise 10: Heavy ion beams

Beginners' FLUKA Course

Exercise: Heavy ion beams

Create a folder called **ex10** and start there a new flair project based on the course template (as before)

Save the input as **ex10.inp**

replace the proton beam with an oxygen beam having the same energy per nucleon

- swap the water and lead material assignments (just to save CPU time)
- score the charge spectrum of ions ($Z \geq 3$) at the boundaries between Pb and Al, Al and water, and water and air (at $z=10\text{cm}$)

define a dummy cylindrical region 1 μm thick (5cm radius) between $z=9.9999\text{cm}$ and $z=10\text{cm}$

add three USRYIELD detectors with particle charge as the first quantity (from 2.5 to 9.5) and polar lab angle as the second quantity (from 0 to 90 deg), use unformatted unit 90

- score the LET spectrum (in water) of ions ($Z \geq 3$) and charged particles at the end of the target

add two USRYIELD detectors with Linear Energy Transfer [given in $\text{keV}/(\mu\text{m g}/\text{cm}^3)$] as the first quantity (from 0.0 to 20.0) and particle charge as the second quantity (from -2.5 to 9.5), use unformatted unit 89

Exercise: Compile and run

- In order to run with ions one should compile a custom executable linking **dpmjet** (\$FLUPRO/flutils/ldpmqmd)

