



Exercise 11: Activation

Beginners' FLUKA Course

Exercise 11: Activation

- ❑ copy the solution of Exercise 5 (**ex5.inp**) into a new directory (**ex11**), rename it as **ex11.inp** and open it using FLAIR
- ❑ add irradiation profile of *three irradiation periods* of 7 days each, separated by 4 days of shutdown
- ❑ assume as *intensity* during each period 10^5 protons per second
- ❑ consider *two cooling periods*: one hour and one month
- ❑ kill *electromagnetic* cascade in the prompt particle cascade
- ❑ set transport *thresholds* for decay electrons/positrons and photons at 100keV (kinetic energy) and 10KeV, respectively

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- add scoring of *specific activity* in Bq/cm³ in the aluminum and lead cylinders of the target for both cooling periods with USRBIN and with RESNUCLE and persuade yourself that they give the same results (in order to compare results you need to format the USRBIN summary file, do it inside FLAIR)

- calculate dose equivalent rate around the target for both cooling periods using the conversion coefficients for *effective dose* (identifier 'EWT74', selected with the AUXSCORE card), with USRBIN (R-Φ-Z)
 - X=0, Y=0cm
 - Radius: 100 bins for 10 cm
 - Φ: 1 single bin
 - Z: 200 bins from -5 to 15 cm