



# Exercise 1

7th FLUKA Course  
NEA Paris, Sept.29-Oct.3, 2008

# Ex #1 Proton beam impinging on a cylinder of pre-def material

Get the source example files from the course website

<http://www.cern.ch/fluka-course/nea2008>

Download all the **ex1\*.inp** files to ~/work/ex1 directory

Different input formats:

- **ex1.inp**                      fixed card format      free geometry format **(RECOMMENDED)**
- ex1free.inp                  free card format      free geometry format  
*obsolete (but supported)*
- ex1fix.inp                    fixed card format      fixed geometry format **(DEFAULT)**
- ex1double.inp                fixed card format      high-accuracy fixed geometry format
- ex1fixfree.inp                free card format      fixed geometry format

# Ex #1

run ex1.inp in the ex1 dir

```
$$FLUPRO/flutil/rfluka -N0 -M4 ex1 &
```

look at the .out file

```
$emacs [or any editor] ex1001.out &
```

- ❑ find the inelastic scattering length for beam particles in the target
- ❑ convert the beam momentum spread into energy spread (in MeV)
- ❑ determine how many primaries are needed to have a run (with 4 cycles) lasting in total as many minutes as the number of neutrons of the  ${}^6\text{He}$ 's isotope
- ❑ find the fraction of energy leaving the system
- ❑ calculate the power leaving the system for a beam current of 4mA (in S.I. units)