

# **Accelerator Physics and Neutrino Beams**

## **Tutorial II – Exercises**

**E. Keil**

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`http://keil.home.cern.ch/keil/  
MuMu/Doc/NuSchool05/tutorial2.pdf`

## Exercises

- Calculate the bending radius  $\rho$  in a 6 T dipole field for a 50 GeV/c muon
- Calculate the number of turns of a 50 GeV/c muon in a storage ring with circumference  $C = 2$  km, given the muon lifetime at rest  
 $\tau_\mu = 2.19703 \pm 0.00004 \mu\text{s}$
- Calculate the power per running meter, deposited by the charged decay products of muons in equipment surrounding the vacuum chamber, assuming  $10^{14}/\text{s}$  muon decays and 35% of the muon energy in charged decay products
- Calculate the electric power for the whole storage ring, assuming that the power above is deposited at 4.2K and Carnot efficiency
- Show that the RMS divergence is constant in the straight sections between quadrupoles of a straight FODO muon decay lattice without quadrupoles