

PHYS 316 Homework 13

Due: 28 April 2008

Problem 1. Das & Ferbel 8.1.

Problem 2. Das & Ferbel 8.3.

Problem 3. The original design of the Berkeley 184-inch synchrotron gave 350 MeV protons using a magnetic field of about 1.5 T.

- (i) At what radius should the protons be extracted?
- (ii) What is the necessary range of cyclotron frequencies?
- (iii) How long does it take the particle to accelerate?

Problem 4. In the drift tube portion of the Los Alamos Meson Physics Facility (LAMPF) linac, protons are accelerated from 0.75 MeV to 100 MeV. The AC voltage of the system has a frequency of 200 MHz. Find the lengths of the first and last drift tubes in the linac.