THE UNIVERSITY OF CHICAGO
and
THE U S PARTICLE ACCELERATOR SCHOOL

COURSE DESCRIPTIONS

PHYSICS 700 HIGH ENERGY STORAGE RINGS -- R. Talman

Equations of motion. Beam Concepts. Betatron and synchrotron oscillations. Periodicity. Stability. Nonlinear behavior including resonances and introduction to chaos. Collective Behavior. Statistical phenomena. Computer modeling. (1 credit)*

PHYSICS 701 RELATIVISTIC ELECTRONICS -- V. Granatstein

Electromagnetic wave theory. Resonators. Re-entrant cavities. Electron beam fundamentals. Space charge waves. Klystrons. Gyrotrons. Free electron lasers. Emphasis on understanding the principles of rf power sources. (1 credit)*

PHYSICS 702 PARTICLE BEAMS: MAGNETIC OPTICS -- K. Brown

Fundamentals of charged particle optics. Differential equations. Matrix methods. Description of first order optics and optics modules. Higher order optics. Geometric and chromatic aberrations. Optical symmetries. Design of optical systems. New Techniques. (1/2 credit)*

PHYSICS 703 PARTICLE BEAMS: ACCELERATION -- P. B. Wilson

Basic principles of acceleration of particle beams. Equations of motion. Phase stability. Introduction to beam loading and beam-cavity interactions. Wakefield formalism and phasor diagrams. Emphasis on developing a physical understanding of the interactions between particle beams and rf structures. (1/2 credit)*

*1 University of Chicago credit = 3.33 semester hours = 5.0 quarter hours.