

REVIEWS OF ACCELERATOR SCIENCE AND TECHNOLOGY

Volume 2 Medical Applications of Accelerators

The theme of this volume 'Medical Applications of Accelerators' is of enormous importance to human health and has a deep impact on our society.

The invention of particle accelerators in the early 20th century created a whole new world for producing energetic x-rays, electrons, protons, neutrons and other particle beams. Immediately these beams found applications in medicine. There are two important yet distinct medical applications: (1) accelerators produce radioisotopes for various medical tests in nuclear medicine and positron emission tomography (PET) used to diagnose millions of patients each year; (2) accelerators produce particle beams for radiation therapy for the treatment of cancer. The particle beams can be x-rays (generated by high-energy electrons), protons, neutrons or heavy ions such as carbon. Today there are more than 5,000 accelerators routinely used in hospitals all over the world for nuclear medicine and cancer therapy.

This volume contains 14 articles, all written by distinguished scholars.

Contents:

- Physical and Biological Basis for Proton and for Carbon Ion Radiation Therapy and Clinical Outcome Data (*H Suit et al.*)
- The Production of Radionuclides for Radiotracers in Nuclear Medicine (*T J Ruth*)
- Proton Radiation Therapy in the Hospital Environment: Conception, Development, and Operation of the Initial Hospital-Based Facility (*J M Slater et al.*)
- Microwave Electron Linacs for Oncology (*D H Whittum*)
- Heavy Particle Radiotherapy — System Design and Application (*H Tsujii et al.*)
- Linacs for Hadrontherapy (*U Amaldi et al.*)
- Medical Cyclotrons (*D Friesel & T Antaya*)
- Synchrotrons for Hadrontherapy (*M Pullia*)
- Beam Delivery Systems for Particle Radiation Therapy: Current Status and Recent Developments (*J M Schippers*);
- Laser Acceleration of Protons for Radiation Therapy (*T Tajima et al.*);
- FFAGs as Accelerators and Beam Delivery Devices for Ion Cancer Therapy (*D Trbojevic*);
- The Dielectric Wall Accelerator (*G J Caporaso et al.*);
- The Supercollider: the Texas Days — A Personal Recollection of Its Short Life and Demise (*S Wojcicki*);
- A Man for All Seasons: Robert R Wilson (*E L Goldwasser*).

Readership: Physicists, engineers and MEDICAL practitioners in accelerator science.

300pp (approx.)
978-981-4299-34-3

Winter 2009
US\$88 £48



