AbstractID: 9812 Title: Proton Therapy

The clinical advantages of proton beams have become widely recognized and there has recently been a significant increase in interest for building additional proton therapy facilities. There are currently over 25 institutions worldwide treating patients with proton beams and over 55,000 patients have been treated. There are at least 25 new facilities in various stages of planning and building. However, the fraction of patients treated with protons each year remains extremely small compared to the total number of cancer patients treated with external beam photons and electrons. The advantage of proton beams lies primarily in their excellent dose localization as compared to that which can be achieved using photon beams. Due to the Bragg peak characteristic in the depth dose of proton beams, the integral dose from proton therapy is, in general, about two times less that that for photon treatments. This allows higher doses to be delivered to target volumes, resulting in increased probabilities of local control, and lower doses delivered to critical normal tissues, resulting in decreased probabilities of treatment-related morbidity. There are many challenges associated with increasing the accessibility of proton therapy not the least of which is the very limited number of clinical staff with knowledge of and training in proton therapy. The aim of the present Continuing Education Course is to provide a basic understanding of the rationale for proton therapy, physics of proton beams, technology of proton beam acceleration and transport, delivery of proton treatments, proton treatment planning and clinical results of proton therapy.

Educational Objectives:
Understanding of

1. the physical characteristics of proton beams and interactions in tissues.
2. the beam production and treatment delivery technology for proton beams.
3. the clinical commissioning of proton therapy beams.
4. the basic principles of proton treatment planning.
5. the clinical results for proton therapy.