

AbstractID: 9917 Title: Proton Therapy Refresher
Course, Part II: Practical Challenges and
Opportunities for Proton Therapy

Proton beams offer tremendous potential for conformal avoidance therapy dramatically reducing the dose delivered to normal tissues. Although proton therapy is capable of high precision in targeting only diseased tissue, it is also less forgiving requiring vigilance in its application. Several key challenges remain before proton beams are fully exploited as a standard treatment modality. These challenges include: 1) patient positioning, registration and immobilization devices; 2) beam shaping devices; 3) quick but accurate automatic localization; and 4) interoperability between the various components of the proton therapy process. In addition, continuing surveillance must be performed on a patient-by-patient basis to ensure that proper parameters and uncertainties are used in selecting margins. Numerous examples of these challenges and opportunities to meet them will be presented.

Educational Objectives:

1. Understand the requirements for positioners, registration, and immobilization devices that are compatible with the delivery of high quality proton beams.
2. Become familiar with typical beam shaping devices, their limitations, and future directions.
3. Understand the requirements for localization systems.
4. Become familiar with the magnitude of various uncertainties and their effects on selecting margins.
5. Become familiar with the interdependence of the multiple systems required to treat a patient with proton beams.