AbstractID: 9852 Title: IMRT Promises and Problems

Intensity-modulated radiation therapy (IMRT) represents one of the most significant technical advances in the recent years. IMRT is not just an add-on to the current radiation therapy process; it represents a new paradigm that requires knowledge of multimodality imaging, setup uncertainties and internal organ motion, tumor control probabilities, normal tissue complication probabilities, three-dimensional dose calculation and optimization, and dynamic beam delivery of non-uniform beam intensities. IMRT is getting clinically used in the treatment of Prostate, Head and Neck, and Breast. Each of these treatment sites presents unique challenges. Therefore, the goal of this session is to address the following questions for each treatment site:

- What is the rationale for using IMRT?
- What evidence currently exists to support IMRT use?
- What problems exist in target and normal tissue definition?
- What are the challenges in defining dose volume criteria used to evaluate treatment plans?
- What problems exist in dose calculations?
- What are the issues in IMRT delivery, verification, and documentation?

The presentations and panel discussion will expound on issues such as; dose escalation, normal tissue sparing, imaging and target delineation, clinical and setup margins, managing inter- and intra-fractional motion, dose inhomogeneity, treatment delivery efficiency, and quality assurance.

Educational Objectives:

1. Describe the planning and delivery issues in IMRT.
2. Provide guidance and assistance to the clinical medical physicist in making judicious decisions in implementing a safe and efficient IMRT program in their clinics.