1. Record Nr. UNINA9910778819503321

Titolo	Adaptive motion compensation in radiotherapy / / edited by Martin J. Murphy
Pubbl/distr/stampa	Boca Raton, Fla. : , : CRC Press, , 2012
ISBN	0-429-19348-3 1-280-12176-9 9786613525628 1-4398-2194-1
Descrizione fisica	1 online resource (163 p.)
Collana	Imaging in medical diagnosis and therapy
Altri autori (Persone)	MurphyMartin J
Disciplina	615.8/42
Soggetti	Image-guided radiation therapy Radiotherapy - Data processing
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	A Taylor & Francis book.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Front Cover; Contents; Series Preface; Preface; About the Editor; List of Contributors; Introduction; 1. Real-Time Tumor Localization; 2. Theoretical Aspects of Target Detection and Tracking; 3. Respiratory Gating; 4. The CyberKnife® Image-Guided Radiosurgery System; 5. Fundamentals of Tracking with a Linac Multileaf Collimator; 6. Couch-Based Target Alignment; 7. Robotic LINAC Tracking Based on Correlation and Prediction; 8. Treatment Planning for Motion Adaptation in Radiation Therapy; 9. Treatment Planning for Motion Management via DMLC Tracking 10. Real-Time Motion Adaptation in Tomotherapy® Using a Binary MLC11. Combination of a LINAC with 1.5 T MRI for Real-Time Image Guided Radiotherapy; 12. The ViewRayTM System; 13. Fault Detection in Image-Based Tracking
Sommario/riassunto	Preface External-beam radiotherapy has long been vexed by the simple fact that patients can (and do) move during the delivery of radiation. The most elegant and forward-looking solution to this reality is to actively adapt the radiation delivery process to the patient's natural movements. Recent advances in imaging and beam delivery technologies have now made this solution a practical reality. The

purpose of this book is to present to researchers and clinical practitioners in radiation therapy an overview of the current and prospective state of the art in motion-adaptive radiation therapy. It presents technical reviews of each of the contributing elements of a motion-adaptive system (including target detection and tracking, beam adaptation, and patient realignment), discusses treatment planning issues that arise when the patient and internal target are mobile, describes several integrated motion-adaptive systems that are in clinical use or at advanced stages of development, and concludes with a review of the system control functions that must be an essential part of any therapy device that operates in a near-autonomous manner with limited human interaction. From these chapters, the reader will hopefully gain not only an understanding of the technical aspects and capabilities of motion adaptation but also practical clinical insights into planning and carrying out various types of motion-adaptive radiotherapy treatment--Provided by publisher.