Proton and Carbon Ion Therapy (Imaging in Medical Diagnosis and Therapy)

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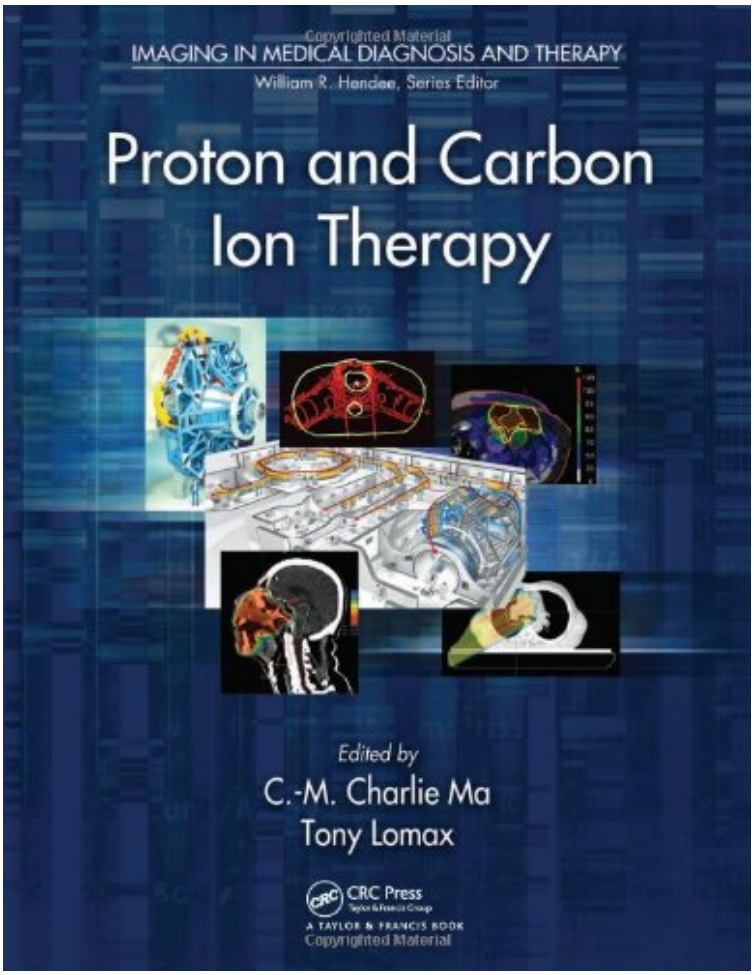

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Proton and Carbon Ion Therapy is an up-to-date guide to using proton and carbon ion therapy in modern cancer treatment. The book covers the physics and radiobiology basics of proton and ion beams, dosimetry methods and radiation measurements, and treatment delivery systems. It gives practical guidance on patient setup, target

localization, and treatment planning for clinical proton and carbon ion therapy. The text also offers detailed reports on the treatment of pediatric cancers, lymphomas, and various other cancers. After an overview, the book focuses on the fundamental aspects of proton and carbon ion therapy equipment, including accelerators, gantries, and delivery systems. It then discusses dosimetry, biology, imaging, and treatment planning basics and provides clinical guidelines on the use of proton and carbon ion therapy for the treatment of specific cancers. Suitable for anyone involved with medical physics and radiation therapy, this book offers a balanced and critical assessment of state-of-the-art technologies, major challenges, and the future outlook of proton and carbon ion therapy. It presents a thorough introduction for those new to the field while providing a helpful, up-to-date reference for readers already using the therapy in clinical settings.

About the AuthorC.-M. Charlie Ma is a professor, the director of radiation physics, and the vice chairman in the Department of Radiation Oncology at Fox Chase Cancer Center in Philadelphia. Dr. Ma is an active member of the American Association of Physicists in Medicine, the American College of Medical Physics, the American Society for Therapeutic Radiology and Oncology, the European Society for Therapeutic Radiology and Oncology, and the Canadian Organization of Medical Physicists. An internationally recognized expert in the physics of intensity modulated radiation therapy and image-guided radiation therapy, he has lead research focused on laser-accelerated proton beams for radiation therapy and other advanced radiotherapy treatments. Tony Lomax is the head of medical physics in the Center for Proton Therapy at Paul Scherrer Institute in Zurich. Dr. Lomax is on the editorial board of the European Journal of Medical Physics and is an active member of the American Association of Physicists in Medicine and the European Society for Radiotherapy and Oncology. His research interests include the medical physics aspects of proton therapy, treatment planning, optimization and robustness analysis for treatment plans, image guided therapy, and motion management.