Abstract

Info-Gap Methodology for Evaluating the Robustness of Dose Fractionation Schemes

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Radiation therapy planning is a complex optimization problem that draws upon results from radiobiology experiments and clinical research. One essential aspect of treatment planning is dose fractionation, which seeks to optimize the therapeutic advantage by choosing appropriate values for the total and fractional doses. The choice between competing fractionation schemes is a function of models and experimental results from radiobiology, which are subject to high uncertainties. In this work, we argue that medical physicists and oncologists should consider not only the projected therapeutic advantage of the dose fractionation scheme based on the best available knowledge, but also the robustness to uncertainty with which the scheme achieves the required therapeutic advantage.

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