

Automation of RF tuning for medical accelerators

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RadiaSoft is developing machine learning methods to improve the operation and control of industrial accelerators. Because industrial systems typically suffer from a lack of instrumentation and a noisier environment, advancements in control methods are critical for optimizing their performance. In particular, our recent work has focused on the development of pulse-to-pulse feedback algorithms for use in dose optimization for FLASH radiotherapy. The PHASER (pluridirectional high-energy agile scanning electronic radiotherapy) system is of particular interest due to the need to synchronize 16 different accelerators all with their own noise characteristics. This presentation will provide an overview of the challenges associated with RF tuning for a PHASER-like system, a description of the model used to evaluate different control schema, and our initial results using conventional methods and machine learning methods.

Footnotes

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