

Invitation to the seminar on

## Medical Radiation Physics and Ion-Beam Therapy

by

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### Towards Microdosimetric Patient Specific QA using Solid State Detectors

Microdosimetry investigates the microscopic patterns of energy deposition from ionizing radiation, providing information beyond the capabilities of conventional macroscopic dosimetry. With the advent of LET-based treatment planning, direct measurements of radiation quality are becoming increasingly relevant for improving biological modeling and treatment optimization. Currently, quality assurance (QA) procedures rely primarily on conventional dosimetry, which measures the "radiation quantity" in terms of absorbed dose but does not directly capture "radiation quality", a gap that microdosimetry could help address. Advances in modern instrumentation enable fast and reliable parallel measurements of microdosimetric spectra, opening the possibility of patient-specific QA that directly incorporates information about LET.

This seminar will introduce the fundamentals of experimental microdosimetry and provide a state-of-the-art overview of the field. The potential of microdosimetric measurements for applications in treatment planning and quality assurance (QA) will be explored. Current challenges and limitations will be discussed from an instrumentation perspective. An overview of current joint research activities involving the Marietta Blau Institute for Particle Physics, MedAustron, the Medical University of Vienna, and TU Wien will also be presented.

**Tuesday, 21. April 2026, 09:00 am**

Zoom: <https://tuwien.zoom.us/j/69660150906?pwd=FQRS8TnWx4hGuNEqjmVLfYostoOXLW.1>

For updates, please register at: <https://list.tuwien.ac.at/sympa/info/medaustron-seminar>

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