

International Symposium on Standards, Applications and Quality Assurance in Medical Radiation Dosimetry (IDOS 2026)



Monday 5 October 2026 - Friday 9 October 2026

VIC, Vienna

Scientific Programme

Themes and Topics

The symposium will cover recent developments in the field of radiation dosimetry standards, applications and quality assurance, with dedicated topical sessions on specific areas from standards laboratories to medical applications within radiotherapy, diagnostic and interventional radiology, nuclear medicine and radiopharmaceutical therapy.

The theme for this edition of the symposium is: The heart of dosimetry: where clinical reality meets standards.

The IAEA welcomes both academic and practice-based contributions on the following topics:

Fundamentals in radiation dosimetry

- Fundamentals of dosimetry in external beam radiotherapy
- Fundamentals of dosimetry in brachytherapy
- Fundamentals of dosimetry in nuclear medicine and radiopharmaceutical therapy
- Fundamentals of dosimetry in diagnostic and interventional radiology
- Radiation related quantities, dosimetry methods, and reference data for the safe and efficient application of ionizing radiation in various applications of ionizing radiation

Radiation dosimetry measurement standards for imaging, therapy and radiation protection

- International measurement system and comparisons and calibrations in ionizing radiation metrology
- Reports on key comparisons and CMCs
- Standards for absorbed dose to water, air kerma, radionuclide activity
- New developments in dosimetry measurement standards, including water and graphite calorimetry
- Use of calorimeters and transfer standards in clinical settings
- Documentary standards
- Dosimetry codes of practices: developments, testing, implementation and comparison
- Computational methods in radiation metrology
- Characterisation of radiation beams and sources used for calibration
- X ray spectrometry
- Traceability and measurement uncertainty

Reference dosimetry and comparisons in external beam radiotherapy

- Status and implementation of national and international dosimetry protocols in external beam radiotherapy (e.g. small field dosimetry)
- Developments in calibration protocols
- Dosimetry for non-standard machine geometries and beam delivery
- Dosimetry in new external beam radiotherapy modalities (e.g. SFRT, ultra-high dose rate RT)
- New data, perturbation and correction factors
- Updates in kilovoltage X ray therapy
- Traceability and uncertainties

Reference dosimetry and comparisons in brachytherapy

- Status and implementation of national and international dosimetry protocols in brachytherapy
- Dissemination and clinical use of standards in brachytherapy
- Dosimetry with new radioactive and X ray brachytherapy (eBT) sources
- New data, perturbation and correction factors
- Traceability and uncertainties

Reference dosimetry and comparisons in proton and light ion beam therapy

- Status and implementation of national and international dosimetry protocols in proton and light ion therapy
- Basic and new data for dosimetry
- Perturbation and correction factors
- Characterisation of clinical beam qualities
- Calibration of beam monitors
- Dosimetry in ultra-high dose rate proton beams
- Detectors for proton and light ion beam therapy
- Traceability and uncertainties

Standard dosimetry in diagnostic and interventional radiology

- Status and implementation of national and international dosimetry protocols in diagnostic and interventional radiology
- Dosimetry standards and calibration of dosimetry and related instruments used in diagnostic radiology and interventional radiology
- Comparisons in diagnostic and interventional radiology
- Challenges and new data in dosimetry in diagnostic and interventional radiology, updating international dosimetry protocols in X ray diagnostic radiology (TRS-457, IEC 61267, etc.)
- Traceability and uncertainties

Standard dosimetry in nuclear medicine and radiopharmaceutical therapy

- Status and implementation of national and international dosimetry protocols in nuclear medicine and radiopharmaceutical therapy
- Comparisons in nuclear medicine and radiopharmaceutical therapy
- Harmonization in nuclear medicine and radiopharmaceutical therapy
- Traceability and uncertainties

Reference dosimetry and comparisons in radiation protection

- Status and implementation of national and international standards and dosimetry protocols for radiation protection dosimetry
- X and gamma reference radiation for calibration, including data for Am-241 radiation sources
- Neutron dosimetry
- Traceability and uncertainties

Clinical dosimetry in external beam radiotherapy and brachytherapy

- Status and implementation of national and international protocols and guidance documents for clinical dosimetry
- Commissioning of brachytherapy sources and applicators
- Commissioning in external beam radiotherapy
- Modelling and verification of dose in external beam radiotherapy and brachytherapy
- Verification of the treatment planning process (algorithms, data input, dose verification etc.) in external beam radiotherapy and brachytherapy
- Dosimetry for imaging devices used in image-guided radiation therapy
- Dosimetry of special procedures (intra-operative radiation therapy, total body irradiation, total skin irradiation)
- In-vivo dosimetry
- Plan-class specific reference field dosimetry
- Patient specific QA
- 3D dosimetry
- Out-of-field dosimetry
- Dosimetry in the presence of magnetic fields (e.g. MRI-linac)
- Dosimetry in advanced brachytherapy and external beam radiotherapy modalities, including motion-management techniques and other emerging trends
- Dosimetry of ultra-high dose rate beams (FLASH therapy)
- Uncertainties

Clinical dosimetry in diagnostic and interventional radiology

- Status and implementation of national and international protocols and guidance documents for clinical dosimetry
- Developments in dosimetry for breast imaging, CT, fluoroscopy, and dental imaging
- Photon counting and spectral CT dosimetry
- From air kerma to patient dose
- Mathematical phantoms for dose calculations
- Characterisation of clinical beam qualities for traceable measurements
- Cross calibration and field calibration of dosimeters
- Accuracy of dose indices and Digital Imaging and Communications in Medicine (DICOM)-based dose reporting
- Dose management systems and related utilization
- Dose registries
- Patient specific dosimetry, including foetal dosimetry
- Dosimetry for paediatric radiology
- Uncertainty assessment and use of dosimetry data

Clinical dosimetry in nuclear medicine and radiopharmaceutical therapy

- Status and implementation of national and international protocols and guidance documents for clinical dosimetry
- Patient specific and imaging-based dosimetry
- Calibrations and procedures for measurements of activity
- Quantitative imaging of radionuclides
- Transfer of the quantity of radioactivity to clinic
- Pharmacokinetic models for dosimetry and cellular level dosimetry
- Dosimetry for paediatric studies
- Dosimetry for targeted radiopharmaceutical therapy (peptides, antibodies, small molecules)
- Dosimetry for new radiopharmaceuticals for therapy
- Dosimetry for theranostics and hybrid imaging (e.g., PET/CT, SPECT/CT).
- Advances in alpha-emitter dosimetry for targeted therapies
- Dosimetry for novel PET tracers

Independent dosimetry audits

- Dosimetry audits in radiotherapy (national and international dosimetry audit networks, postal and on-site audits in reference and non-reference conditions, virtual audits)
- Dosimetry audits of advanced radiotherapy modalities
- Quality and audits of calibration laboratory services
- Principles and importance of dosimetry audits: detector types, phantoms, clinical context and impact, nomenclature, regulatory framework
- Audits in diagnostic and interventional radiology
- Integration of new audit methodologies for radiopharmaceutical therapy
- Audits for accreditation purposes and credentialing for clinical trials
- Comprehensive audits (diagnostic radiology, nuclear medicine, radiotherapy)
- Uncertainty assessment and informed decision making

Radiation protection dosimetry

- Use of radiation protection quantities
- Assessment of exposure for workers in medical use of ionizing radiation
- Dosimetry in pulsed X ray fields
- Dosimetry for workplace monitoring
- Dosimetry for individual monitoring, including eye lens, extremities and skin
- Modelling for dose calculation in radiation protection and shielding calculations
- Harmonization of individual dosimetry, including intercomparisons and uncertainty assessment

Detector technology and applications in dosimetry

- Dosimetry systems for external beam radiotherapy, brachytherapy, diagnostic and interventional radiology, nuclear medicine and radiopharmaceutical therapy
- Modern instruments for reference and relative dosimetry
- Commissioning and quality assurance of dosimetry systems and the maintenance of dosimetry equipment
- Ionizing radiation metrology regulations, type testing and verification of dosimeters
- Phantoms and auxiliary equipment used for dosimetry

Artificial intelligence (AI) and computational dosimetry

- AI applications in radiation dose prediction, optimization and monitoring in radiation therapy, diagnostic and interventional radiology, nuclear medicine and radiopharmaceutical therapy
- Commissioning, performance evaluation, clinical validation and quality assurance of AI-based dosimetry systems in radiation therapy, diagnostic and interventional radiology, nuclear medicine and radiopharmaceutical therapy
- AI in radiation protection dosimetry
- Computationally enabled/enhanced radiation standards
- Interoperability and standardization of AI-based dosimetry systems
- AI-driven personalized dosimetry models
- Patient-specific predictive modelling
- Computational tools for molecular imaging dosimetry
- Digital twins
- Computational dosimetry methods and applications
- Education and training of radiation metrologists and medical physicists in AI
- Ethical and regulatory considerations in the use of AI for radiation dosimetry

Other related topics

- Education and training for building and maintaining competency in radiation dosimetry
- Pre-clinical dosimetry
- Dosimetry in small animal irradiators
- Dosimetry in Boron neutron capture therapy (BNCT)
- Dosimetry of microbeams
- Alternative calibration methods
- Microdosimetry
- Nanodosimetry
- Collective effective dose and patient risk
- Quality management system in dosimetry laboratories
- Quality management system in dosimetry audit networks
- Use of digital certificates/digitalisation
- Data security, privacy, and interoperability of dosimetry databases
- Establishment of new dosimetry laboratories
- Dosimetry for radiobiology and radiation research
- Retrospective and emergency preparedness response dosimetry