

WORKSHOP ON TECHNOLOGIES & APPLIED RESEARCH IN PROTON- THERAPY

January 21- 23, 2026, Madrid. Spain

21 January

Session I: Overview, current status and challenges of protontherapy

Chairperson: *Gaston García, CMAM-UAM*

11.00 - 13.00

11.00 (10 min) — *Welcome Address*

11.10 (20+5 min) - **Invited** — Felipe Calvo, Hospital Universitario Gregorio Marañón (HUGM)
Proton Therapy: Clinical Horizon 2030

11.35 (20+5 min) - **Invited** — Diego Azcona, Clinica Universitaria de Navarra (CUN)
Clinical research challenges in a proton therapy facility

12.00 (20+5 min) - **Invited** — Maruxa Pérez, Sociedad Española de Física Médica (SEFM)
The expansion of proton therapy in Spain: professional implications and an opportunity for leadership [\[Abstract\]](#)

12.25 (12+3 min) - **Invited** — Alfonso López Fernández, Hospital Universitario de Fuenlabrada
The proton therapy facility project at the University Hospital of Fuenlabrada

Session II: Recent Developments: International Experience & Challenges

Chairperson: *César Domingo Pardo, IFIC (CSIC-Universitat de València)*

14.30 - 17:15

14.30 (20+5 min) - **Invited** — Alejandro Cárabe, Jefferson Einstein Hospitals, USA
Technology cost reduction methods & efficiency increase

14.55 (20+5 min) - **Invited** — Oliver Jäkel, German Cancer Research Center (DKFZ), Germany
Current developments in proton therapy

15.20 (20+5 min) - **Invited** — Martina Fuss, MedAustron, Austria
Ion beam therapy at MedAustron: current capabilities, recent developments and future plans
[\[Abstract\]](#)

15.45 (20+5 min) - **Invited** — Anne Vestergaard, Danish Center for Particle Therapy (DCPT), Denmark
Enhancing Proton Therapy for Brain Tumors: Potential strategies for coordinated Variable RBE Implementation across Europe

16.10 (20+5 min) - **Invited** — Lorenzo Brualla, West German Proton Therapy Centre Essen, Germany and IFIC, CSIC-UV, Spain
Whole-body dose Monte Carlo system for second primary cancer risk computation [\[Abstract\]](#)

16.35 (20+5 min) - **Invited** — Antoni Rucinski, Institute of Nuclear Physics, Polish Academy of Sciences: Krakow, PL
Advanced Nanoscale Physics and Chemistry of Proton Radiation: New Directions for Proton Therapy Research

17.00 (12+3 min) - **Invited** — Marco Durante, GSI-Darmstadt, Germany
Role of PTCOG in the particle therapy arena

17h15 - 17h45 — *GROUP PHOTO + COFFEE + POSTERS*

17h45 - 18h45 — *ROUND TABLE*

22 January

Session III: Applied Research on Treatment Monitoring

Chairperson: Anne Vestergaard, Danish Center for Particle Therapy (DCPT), Denmark

9.30 - 11.00

09.30 (20+5 min) - **Invited** — João Seco, German Cancer Research Center (DKFZ), Germany
Harnessing Particle Physics for Real-Time Monitoring in Radiotherapy: The Promise of Prompt Gamma Imaging [\[Abstract\]](#)

09.55 (12+3 min) — Alexander Pryanichnikov, Institute of Biomedical Engineering (IBT), Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany

Medical Physics and Technological Challenges of Clinical Implementation of Upright Image-Guided Proton Therapy [\[Abstract\]](#)

10.10 (12+3 min) — Alba Meneses-Felipe, Universidad de Navarra

Dosimetric Impact of the Interplay Effect in Moving Tumors Treated with a Pencil Beam Scanning Proton Therapy System [\[Abstract\]](#)

10.25 (12+3 min) — Fernando Hueso González, Instituto de Física Corpuscular (IFIC), CSIC-UV

Empowering proton therapy research with tools free of vendor lock-in [\[Abstract\]](#)

10.40 (12+3 min) — Hugo Freitas, German Cancer Research Center (DKFZ), Germany

Development of a low-cost x-ray spectrometer for in vivo dose measurements [\[Abstract\]](#)

11.00 - 11.30 — COFFEE + POSTERS

Session IV: Applied Research in Radioactive Beams and Detectors

Chairperson: *Alejandro Cárabe, Jefferson Einstein Hospitals, USA*

11.30 - 13.00

11.30 (20+5 min) - **Invited** — Marco Durante, GSI-Darmstadt, Germany

Treatment of mouse tumours with radioactive ion beams

11.55 (12+3 min) — Pablo de la Fuente, CMAM, Universidad Autónoma de Madrid

Development of a Versatile Pulsed System in the Ion Implantation Beamline Enabling Proton Therapy Research at CMAM [\[Abstract\]](#)

12.10 (12+3 min) — Benedetta Brusasco, Universitat Politècnica de Catalunya

The LINrem Project Solutions : LINrem, LINpass and NESTA in Hadron Therapy Centers and High-Energy Neutron Reference Fields [\[Abstract\]](#)

12.25 (12+3 min) — Giulia Tosetti, Université de Caen Normandie, ENSICAEN, CNRS/IN2P3, LPC Caen UMR6534, F-14000 Caen, France

Evaluation of a detector design to measure the superficial 2D dose distribution for skin cancer treated by protontherapy [\[Abstract\]](#)

12.40 (12+3 min) — Anne-Marie Frelin, GANIL

Reconstruction of three-dimensional dose distributions measured in pencil beam scanning with a plastic scintillator detector [\[Abstract\]](#)

Session V: Applied Research on Dosimetry

Chairperson: *Oliver Jäkel, German Cancer Research Center (DKFZ), Germany*

14.30 - 16.30

14.30 (20+5 min) - **Invited** — Carles Domingo, Universidad Autonoma de Barcelona
Challenges in measuring neutron fields in proton therapy: dosimetry, spectrometry and risk assessment [\[Abstract\]](#)

14.55 (12+3 min) — Jorge Miguel Sampaio, Laboratório de Instrumentação e Física Experimental de Partículas (LIP) - e Faculdade de Ciências da Universidade de Lisboa (FCUL)
High-Resolution Dosimetry to Improve Particle Therapy [\[Abstract\]](#)

15.10 (12+3 min) — Amanda Nathali Nerio Aguirre, Instituto de Estructura de la Materia (CSIC)
Performance assessment of the IEM-CSIC proton Scanner [\[Abstract\]](#)

15.25 (12+3 min) — Ivan Lopez Paz, Institut de Microelectronica de Barcelona
Radiation-Hard Silicon Carbide Dosimeters for Electron and Proton FLASH QA [\[Abstract\]](#)

15.40 (12+3 min) — Carolina Fonseca Vargas, IFIC - UV
Proton Range Verification Using a Multidetector Setup: Preliminary Results from the PRIDE Project [\[Abstract\]](#)

15.55 (12+3 min) — Carla Riera-Llobet, CNM-IMB (CSIC)
First microdosimetry maps in proton therapy at DCPT [\[Abstract\]](#)

16.10 (12+3 min) — Miguel Ángel Carrera, AVS
AVS developments for hadrontherapy

16.25 - 16.45 — *COFFEE + POSTERS*

Session VI: Radiobiology I: Emerging Experimental Approaches in Particle Therapy

Chairperson: *Marco Durante, GSI-Darmstadt, Germany*

16.45 - 18.30

16.45 (20+5 min) - **Invited** — Walter Tinganelli, GSI-Darmstadt, Germany
Carbon Ultra-High Dose Rate Irradiation: in vivo and in vitro results [\[Abstract\]](#)

17.10 (12+3 min) — Paula Martínez Bononad, CMAM-Universidad Autónoma de Madrid
Energy-Dependent Radiobiological Response of Glioblastoma Cells to Proton Irradiation [\[Abstract\]](#)

17.25 (12+3 min) — Tiago Azevedo, Centro de Física da Universidade de Coimbra (CFisUC)
Biological Response of 3D TNBC Spheroids to Proton Beam Therapy: A Comparative Study with Normal Breast Cells [\[Abstract\]](#)

17.40 (12+3 min) — Inés del Monte García, Universidad Complutense de Madrid
Characterization of a FLASH irradiation at the IMP beamline at CMAM in a healthy and tumoral breast cancer model [\[Abstract\]](#)

17.55 (12+3 min) — Martina Quartieri, Universidad Complutense de Madrid
Design and validation of a hypoxic chamber system for radiobiological experiments at photon and proton therapy facilities [\[Abstract\]](#)

18.10 (12+3 min) — Jessica Juan Morales (Instituto de Instrumentación Para Imagen Molecular, i3M-CSIC)
Live cell spectroscopy analysis for personalized particle radiation therapy of metastatic bone cancer [\[Abstract\]](#)

23 January

Session VII: Radiobiology II: Advanced Nanomaterials for Radiation Response Modulation

Chairperson: Antoni Rucinski, Institute of Nuclear Physics PAS and CCB Krakow proton therapy center

9.30 - 11.00

09.30 (20+5 min) - **Invited** — Pietro Apra, University of Torino, Italy
Nanodiamonds for radiobiology: ideas and perspectives [\[Abstract\]](#)

09.55 (12+3 min) — Belén Cortés-Llanos, CMAM-Universidad Autónoma de Madrid
Cell Density and Nanoparticle-Mediated Modulation of Radiation Response in U87-MG Glioblastoma Cells under Proton Irradiation [\[Abstract\]](#)

10.10 (12+3 min) — Joana Antunes, LIP/FCUL
Monte Carlo simulation of gold nanoparticle mediated DNA damage [\[Abstract\]](#)

10.25 (12+3 min) — Adrian Sanz Galvez, Department of Biochemistry and Molecular Biology, Complutense University, Madrid
Identification of Genetic Factors Influencing the synergistic effect of Proton Therapy and cannabinods in glioma cells using CRISPR libraries [\[Abstract\]](#)

10.40 (12+3 min) — Teresa Pinheiro, Instituto Superior Técnico, Universidade de Lisboa, Lisboa, Portugal

Enhancing radiotherapy with gold-coated nanodiamonds using 2D cultures and 3D spheroids

[\[Abstract\]](#)

11.00 - 11.30 — COFFEE + POSTERS

Session VIII: Computing Techniques

Chairperson: Lorenzo Brualla, West German Proton Therapy Centre Essen, Germany

11.30 - 13.00

11.30 (20+5 min) - **Invited** — Pablo de Vera, CIOyN, Universidad de Murcia, Murcia, Spain
When water phase matters: its effect on the stopping power and depth-dose curves for proton therapy

11.55 (12+3 min) — Pedro Arce Dubois, CIEMAT
On the advantages of using a full Monte Carlo simulation for proton therapy [\[Abstract\]](#)

12.10 (12+3 min) — Angela Maria Henao Isaza, Instituto de Microelectrónica
Monte Carlo Modeling of Electron and Proton beams in FLASH Radiotherapy [\[Abstract\]](#)

12.25 (12+3 min) — Declan Garvey, Instituto de Física Corpuscular, University of Valencia
Real-Time Proton Therapy Monte Carlo Simulations in Highly Parallelised Systems [\[Abstract\]](#)

12.40 (12+3 min) — Raúl Ena, EMFTEL & IPARCOS, Universidad Complutense de Madrid
Application of neural networks for modeling proton transport in biological tissues [\[Abstract\]](#)

13.00 - 13.45 — ROUND TABLE

13.45 - 14.00 — CLOSING REMARKS

Posters Session

P1 — José Andrés Avellaneda González, Universidad Complutense de Madrid
Exploring The Limits of Pile-Up Recovery for Prompt-Gamma Imaging in Proton Therapy
[\[Abstract\]](#)

P2 — Marta Freire, Instituto de Instrumentación para Imagen Molecular (i3M, CSIC-UPV)
BGO-based PET Scanner for Dose Verification after Proton Therapy [\[Abstract\]](#)

- P3** — Hugo Freitas, German Cancer Research Center
Prompt Gamma Spectroscopy for Real-Time Calcium Quantification in Proton Therapy [\[Abstract\]](#)
- P4** — Manuel Terradillos-Perea, Medical Image Analysis and Biometry Laboratory, Universidad Rey Juan Carlos, Madrid, Spain)
Integrating Dosiomics, Radiomics, and LET Maps for Predicting Temporal Lobe Necrosis in Proton Therapy [\[Abstract\]](#)
- P5** — Blanca Rodriguez-Gonzalez, Medical Image Analysis and Biometry Laboratory, Universidad Rey Juan Carlos, Madrid, Spain
Uncertainty-Aware Simultaneous Synthesis and Segmentation via Evidential Deep Learning for Adaptive Proton Therapy [\[Abstract\]](#)
- P6** — Gastón GARCIA LOPEZ, CMAM-Universidad Autónoma de Madrid
Phenomenological toy model for flash effect in proton therapy [\[Abstract\]](#)
- P7** — Florent Dougados, IMB-CNM
Cutting-Edge Semiconductor Detectors for Advanced Proton Tomography in Oncological Proton Therapy (PROTECT) [\[Abstract\]](#)
- P8** — Silvia Mena Fernández, Universitat Autònoma de Barcelona
Flexible radiochromic films based on new Abstracts for 2D real time dosimetry [\[Abstract\]](#)
- P9** — Felipe Eduardo Zamorano Labbe, Instituto de Microelectrónica de Barcelona, IMB-CNM-CSIC
Ultra-thin Silicon-Based Neutron Detector for Proton Therapy [\[Abstract\]](#)
- P10** — Francesco MAZZA-SCHUH, LPC CAEN, France
Microdosimeters for fluency rate measurement [\[Abstract\]](#)
- P11** — Marcio Jiménez Venegas, IMB – CNM, Centre de Microelectrònica de Barcelona
Novel radiation resistant detectors based on 4H-SiC for microdosimetry [\[Abstract\]](#)
- P12** — Francisca Afonso, LIP, BioISI
Toward Novel Radiation Therapies for Neurodegenerative Diseases Using Boron Compounds [\[Abstract\]](#)
- P13** — Sara C. Freitas, IFIMUP, Departamento de Física e Astronomia da Faculdade de Ciências da Universidade do Porto, Rua do Campo Alegre, 687, 4169-007 Porto, Portugal
Synergistic effect between photothermal and proton therapy using plasmonic nanoparticles toward higher-efficiency colorectal cancer treatments [\[Abstract\]](#)

- P14** — Vital Ferreira Filho, Instituto Superior Técnico - ULisboa
Tailoring multifunctional nanoplatfoms based on SPIONs and graphene oxide for theranostic applications [\[Abstract\]](#)
- P15** — Edgar Mendes, Instituto Superior Técnico
Synthesis of gold-coated nanodiamonds via green chemistry and their physicochemical characterization as potential radiosensitizers for proton therapy [\[Abstract\]](#)
- P16** — Pablo de la Fuente, CMAM-Universidad Autónoma de Madrid
A Dual-Method Framework for Ionization Cross Section Calculations in Proton–Molecule Collisions [\[Abstract\]](#)
- P17** — Miguel Galocha-Oliva, Universidad de Sevilla
Impact of the physics models for proton microdosimetry in water [\[Abstract\]](#)
- P18** — Carina Coelho, LIP, BioISI, FCUL, CMAM
Proton Radiation as a Modality to Modulate Protein Self-Organization in Neurodegenerative Disease
- P19** — Carlos Ferrer, H.U. La Paz
Diseño curricular, habilidades docentes de formadores y actitud de rotantes/estudiantes en una instalación de protones
- P20** — Clara Isabel García García, Centro de Micro-Análisis de Materiales
Enhancing Proton Therapy Efficacy Through Iron Oxide Nanoparticles
- P21** — Manuel Ratola, Laboratório de Instrumentação e Física Experimental de Partículas, Instituto Superior Técnico
Experimental setup to measure time resolution of fibre detectors