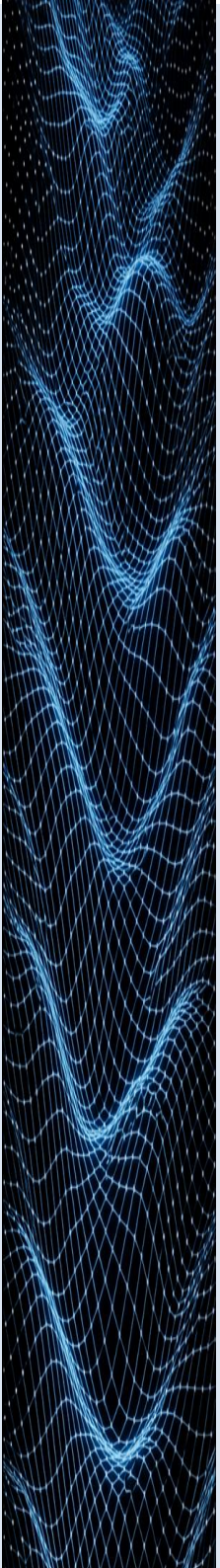
KU LEUVEN

BPS
Belgian Physical Society

General Scientific Meeting
Belgian Physical Society

KU Leuven, Belgium
Leuven, May 27, 2026

Program Book



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Robert Sporken (UNamur)
Jacques Tempere (Universiteit Antwerpen)
Michael Tytgat (Vrije Universiteit Brussel)
Xavier Urbain (UCLouvain)
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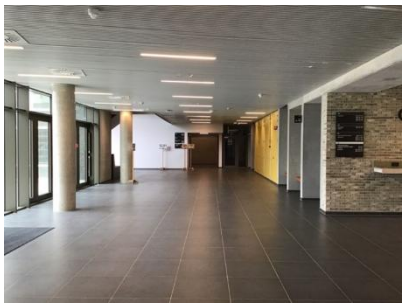
VENUE

Quadrivium building
Celestijnenlaan 200 H
3001 Heverlee

Plenary sessions
Auditorium Rosalind Franklin

Lunch, poster session & drink
Entrance Hall

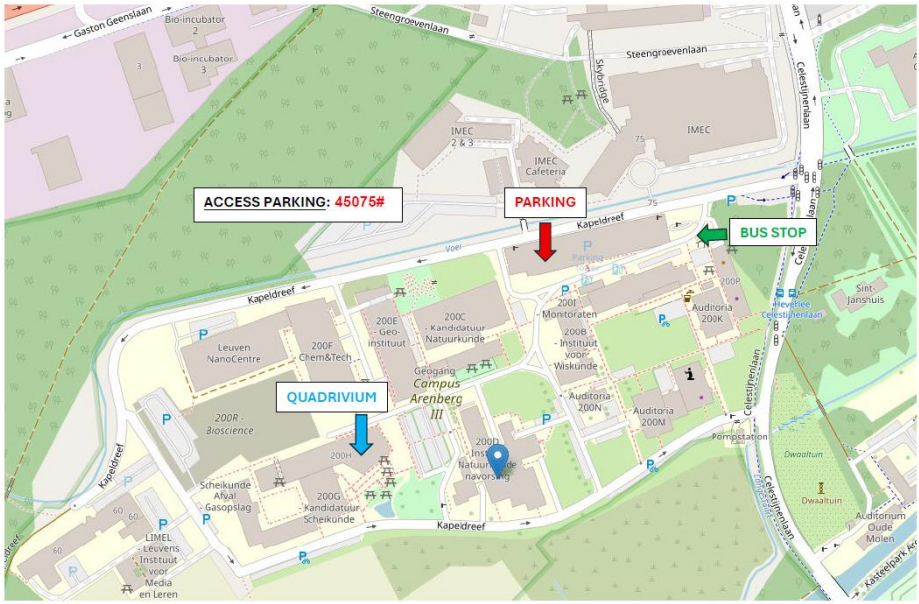


HOW TO REACH

Campus Celestijenlaan 200 – Heverelee

Quadrivium Building

Lecture Room: Aula Rosalind Franklin 01.01



More info:

Access guide Parking Kapeldreef

Access guide Quadrivium

PROGRAMME

8:30 Registration and coffee

9:00 Welcome address

9:10 **Plenary1 – Kristiaan De Greve** (imec)
Taking quantum bits from the lab to 300 mm cmos fab: overcoming materials and interface limitations through advanced semiconductor manufacturing

10:00 **Plenary2 – Michael Tarbutt** (Imperial College London)
Laser-cooled molecules for quantum science and tests of fundamental physics

10:50 Coffee break

11:15 Young scientist oral presentation contest

- **YSC1 – Marie Deseyn** (KU Leuven t)
  Precise nuclear charge radii of silicon isotopes using muonic x-ray spectroscopy
- **YSC2 – Jannes Loonen** (Vrije Universiteit Brussel)
  Radar signal properties and reconstruction for the radar echo telescope for neutrinos
- **YSC3 – Valentin Fonck** (UCLouvain)
  Thermal waves as messengers to image heat dissipation in 3d-integrated cryogenic-CMOS structure

12:25 Conference Picture

12:30 Walking lunch and **poster session**

14:30 **Parallel sessions**

17:15 Reception and closing ceremony

18:30 End

PARALLEL SESSIONS

Earth and planetary sciences, plasma physics

Chair: Fabio Bacchini
Room: 00.100

14:30-15:10: **INV1 - Arno Vanthieghem** (Observatoire de Paris) **- invited**
Fast radio bursts as precursor radio emission from monster shocks

15:10-15:30: **O1 – Isha Loudon** (Université libre de Bruxelles)
Exploring radar echoes from high-energy particle cascades with RET-CR

15:30-15:50: **O2 – Philippe Lamalle** (Royal Miltary Academy)
Integral dielectric kernel modelling approach to wave heating in toroidal plasmas

15:50-16:30: **INV2 - Dirk Hartmann** (MPI Plasma Physics, Greifswald) – **invited** *Overview of Wendelstein 7-X*

16:30-16:50: **O3 – Lennert Quanjel** (KU Leuven)
Thermal and plasma modelling of a hot-cavity ion source for radioactive ion beam production at ISOL@MYRRHA

16:50-17:10: **O4 – Jean Spièce** (UCLouvain)
From polarization dynamics to heat flow in nanoscale ferroelectrics

Atomic and molecular physics, (quantum) optics

Chairs: Ruben de Groote, Kasper Van Gasse
Room: 03.140

14:30-15:05: **INV3 – Anastasia Borschevsky** (University of Groningen) – **invited** *Testing the standard model with molecules*

15:05-15:25: **O5 – Alexandr Bogomolov** (UCLouvain)
Towards rovibrationally resolved photochemistry in H_2O-CO_2

15:25-15:45: **O6 – Arthemise Altman** (UCLouvain)
Lamb-dip and two-photon absorption measurements using wave-modulated NICE-OHMS for precision spectroscopy on water

15:45-15:55: short break

15:55-16:30: **INV4 – Olga Lushchikova** (HFML-FELIX, Nijmegen) – **invited** *Probing structure and reactivity of metal clusters by IR spectroscopy using free-electron lasers*

16:30-16:50: **O7 – Charlotte Bragard** (UCLouvain & UNamur)
Inertial sensing based on GPS disciplined oscillator

16:50-17:10: **O8 – Amir Arsalan Arabieh** (Université Libre de Bruxelles)
Cavity solitons as a nonlinear substrate for photonic neuromorphic computing

Condensed matter and nanostructure physics

Chairs: Yaojia Wang, Clement Mercking
Room: Aula Rosalind Franklin

14:30-15:10: **INV5 – Pascal Gehring** (UCLouvain) **- invited**
Local probing of transverse thermoelectric effects in meso- and nano-scale devices

15:10-15:30: **O9 – Jonathan Leliaert** (Universiteit Gent)
Coercivity-size map of magnetic nanoflowers: elucidating the hyperthermia sweet spot

15:30-15:50: **O10 – Danny E. P. Vanpoucke** (Universiteit Hasselt)
DFT modeling of strained group-IV color centers in diamond

15:50-16:10: **O11 – The Linh Pham** (KU Leuven)
Ultrafast dynamics in strongly-coupled plasmonic metasurfaces

16:10-16:30: **O12 – Serghei N. Klimin** (Universiteit Antwerpen)
Analytical approaches to lattice polarons in finite-width conduction bands

16:30-16:50: **O13** – **Chen He** (KU Leuven)
Substitutional Mn dimers in graphene created by ultralow-energy cluster implantation

16:50-17:10: **O14** – **Arno Depoorter** (Universiteit Gent)
Pole figure measurements in grazing-incidence configuration for characterizing thin film texture

Fundamental interactions, gravitational, theoretical and mathematical physics

Chair: Nikolai Bobev
Room: 00.110

14:30-15:05: **INV6** - **Chiara Toldo** (Université libre de Bruxelles) **- invited**
Thermodynamics of near-extreme black holes

15:05-15:25: **O15** – **Guillaume Lhost** (UMONS)
The last stages of the motion of eccentric binary systems

15:25-15:45: **O16** – **Hynek Paul** (KU Leuven)
Holography as a tool for strongly coupled dynamics

15:45-15:55: short break

15:55-16:30: **INV7** - **Atsushi Ueda** (Universiteit Gent) **- invited**
From the monopole paradox to perfect transmission: topological string attachment in scattering

16:30-16:50: **O17** – **Aaron Beyen** (KU Leuven)
The emergence of activity

16:50-17:10: **O18** – **Thomas Michel** (Université de Liège)
Scrambling signature of scars

Biological, medical and statistical physics

Chairs: Patrick Wagner, Patricia Losada Pérez
Room: 03.120

14:30-15:10: **INV8 - Jef Hooyberghs** (Universiteit Hasselt) **- invited**
Stretching the physical boundaries of DNA hybridization for mutation detection

15:10-15:30: **O19 – Jana Hohmann** (KU Leuven)
Optimizing range shifter use to lower intrauterine doses in pencil beam scanning proton therapy during pregnancy

15:30-15:50: **O20 – Niels Van Santen** (Universiteit Gent)
A linear decomposition of total correlation in non-negative order-k contributions

15:50-16:10: short break

16:10-16:30: **O21 – Daniele Marinazzo** (Universiteit Gent)
Mechanistic control via high-order informational gradients: identifying synergistic drivers for targeted intervention

16:30-16:50: **O22 – Thibau Mangelschots** (Universiteit Hasselt)
Analytical model for the strain-mismatch interaction in DNA

16:50-17:10: **O23 – Robbe Van Haverbeke** (Universiteit Hasselt)
Characterizing biomolecular kinetics through out-of-equilibrium periodic temperature perturbations

Particle physics and nuclear physics

Chair: Ági Koszorús
Room: 03.160

14:30-15:00: **INV9 – Julia Even** (University of Groningen) **- invited**
Taking the NEXT steps towards the northeast of the nuclear landscape

15:10-15:20: **O24 – Yens Elskens** (KU Leuven)
Exploring α- and β-decay induced quenching of the radiative decay of the ^{229}Th nuclear-clock isomer in solid-state hosts

15:20-15:40: **O25 – Jack Shaw** (KU Leuven)
Determination of half-lives, alpha-beta branching and hindrance factors of ^{219,220}Po; implications on nuclear shape

15:40-15:50: short break

15:50-16:10: **O26 – Vital De Henau** (Vrije Universiteit Brussel)
Investigating anomalous air showers with the SKA-Low

16:10-16:30: **O27 – Mathias Beghuin** (ULB & VUB)
Pre-commissioning for the phase-2 upgrade of the CMS outer tracker with cosmic muons and R&D of new silicon sensors

16:30-16:50: **O28 – Tiepolo Wybouw** (Vrije Universiteit Brussel)
milliQan: search for millicharged particles in proton-proton collisions at $\sqrt{s}$ = 13.6 TeV

16:50-17:10: **O29 – Louise Lallement Arnaud** (Université libre de Bruxelles) *Search for atmospheric millicharged particles with the IceCube upgrade*

Physics Education

Chairs: Mieke De Cock & Philippe Smet
Room: 01.110

14:30-15:20: **INV10 – Paul Van Kampen** (Dublin City University) **- invited**
Plot twists and unexpected turns in physics reasoning

15:20-15:50: **O30 – Meike Bremenkamp** (PHYWE Systeme GmbH & Co)
PHYWE – from Göttingen to the world

15:50-16:00: short break

16:00-16:25 **O31 – Rose Stanley** (KU Leuven)
Asteroseismology & exoplanets in the Milky Way: a research-based STEM module for secondary education

16:25-16:50: **O32 – Willem Keppens** (KU Leuven)
Impact of scale comprehension on high school students' conceptual understanding of astronomical phenomena

16:50-17:15: **O33 – Pauline Vandervorst** (Universiteit Antwerpen)
Improved effectiveness of nuclear physics lessons through targeted development of didactic materials

LIST OF POSTERS

* = participates in poster competition

Earth and planetary sciences, plasma physics

P1* **Alliet Robbe** (Université libre de Bruxelles) *A simplex based conservative discretization of the Lorentz force for liquid metal flows*

P2 **Carli Stefano** (Royal Military Academy) *Minimization of ion cyclotron parasitic edge dissipation*

P4 **Gayina Louis** (ULB / UGent) *Computational fluid dynamics for liquid metal flows subject to magnetic fields*

P5 **Reman Bernard** (Royal Military Academy) *Progress in the implementation of the integral dielectric kernel to model RF heating in toroidal plasmas*

P6* **Stoffels Jethro** (Vrije Universiteit Brussel) *Towards calibrating antenna orientations using the Galaxy with RNO-G*

P7 **Viseur Lucas** (UNamur) *Underlying physics of a plasmonic metasurface-driven optical solar reflector*

Atomic and molecular physics, (quantum) optics

P3* **Delaive Célia** (Université de Liège) *Creating NOON states with ultracold bosonic atoms using time crystals*

P8 **Bouchat Julien** (UNamur) *Simultaneous amplification of the angular and spatial Goos-Hänchen shifts by weak measurements*

P9* **Dartois Robin** (UCLouvain) *Proposal for production of Ca heavy-Rydberg states by electron transfer from ultra-long-range Rydberg molecules*

P10 **Dechanxhe Julien** (Université libre de Bruxelles) *Multimode solitons and soliton trains driven by space-time inputs to multimode fibers*

P11 **Jiang Hongjie** (KU Leuven) *Near-geometric capture of water by Vn+ clusters under controlled few-collision conditions*

P12 **Jolly Spencer** (Université libre de Bruxelles) *Vacuum laser acceleration with aberrated ultrashort vector beams*

P13 **Jungers Maxence** (UCLouvain) *Series of doubly excited states converging to the double-ionization threshold of strontium atoms*

P14* **Marin-Bujedo Eduardo** (UCLouvain) *Characterization of a Zeeman slower and a magneto-optical trap for ultracold Ca Rydberg physics*

P15* **Marchand Amandine** (UMONS) *Bio-inspired optimization of infrared absorbers*

P16* **Scheerlinck Joachim** (Universiteit Gent) *Polonium-containing molecules in MYRRHA*

P17* **Smeets Bart** (KU Leuven) *Size-dependent CO_2 reduction by C_{60}-supported vanadium cationic clusters*

P18* **Thakor Meetsinh** (UNamur) *Design and implementation of an experimental setup to measure complex weak values*

P19* **Van Hoorebeke Manon** (Universiteit Antwerpen) *Strain effects on light-matter coupling and exciton trapping in monolayer TMDs*

P20* **Van Loock Jeroen** (Universiteit Antwerpen) *Fragmentation temperature of 1D and 3D quantum droplets in a BEC mixture*

P21* **Vlekken Neel** (UCLouvain) *Multi-laser stabilization system for ultracold-Rydberg-atom and precision-spectroscopy experiments*

Condensed matter and nanostructure physics

P22* **Bakhsh Mohammad** (UCLouvain) *From symmetry to stability: structural and electronic transformation in Cs_2KInI_6*

P23* **Bossuyt Emma** (Universiteit Gent) *The colour of radiation: developing a photochromic indicator for dual-mode UV index monitoring and personal x-ray dosimetry*

P24* **Botterman Emiel** (Universiteit Gent) *Radio-photoluminescence in Eu activated $M_3(PO_4)_2$ (M = Sr, Ba)*

P25* **Cavenaile Loris** (UMONS) *Spectral and polarization control of Smith-Purcell radiation via chiral dielectric gratings*

P26* **Chaoui Khawla** (UNamur) *Advancing solar energy conversion via 2D heterostructures: mechanistic insights into type-II and z-scheme charge dynamics*

P27 **Guillaume Emerick Y.** (UNamur & UHasselt) *DFT+VTST calculations of reaction rate coefficients of gaseous species on (100)–(2×1):H diamond surfaces*

P28 **Hu Wei** (Universiteit Gent) *Fast-evolving photochromism in inorganic photochromic materials*

P29* **Janssens Eliot** (Universiteit Gent) *On the location of Cu^{2+} in TLD-100H*

P30 **Ji Wenhao** (KU Leuven) *Tuning the catalytic performance of CO_2 methanolisation catalysts based on bimetallic gas-phase Cu-Zn nanoparticles*

P31* **Joris Victor** (UMONS) *Absorption enhancement in hybrid Au-TiO_2 nanoparticle assemblies: from dimers to disordered clusters*

P32* **Linsen Wout** (UHasselt) *Predicting ceramic membranes performance in organic solvent nanofiltration: a physics-guided machine learning approach*

P33* **Lotfian Amirreza** (UCLouvain) *Development of a scanning thermal microscopy platform for nanoscale thermal and thermoelectric characterization of 2D materials and nano-devices*

P34* **Melan Aylin** (UNamur & UHasselt) *Unraveling the germanium-vacancy center in diamond*

P35* **Najid El Mekki** (UNamur*) Study of the electronic structure and optical properties of oxygen-deficient tungsten oxide (WO_{3-x}) for electrochromic applications*

P36* **Sluydts Michael** (ePotentia) *Generating, sorting and standardizing microscopy data with artificial intelligence*

P37* **Tirotta Daniele** (KU Leuven & UAntwerp) *Plasmonic gas-phase Ag-Cu nanoparticles deposited on TiO_2 nanotubes for photocatalytic CO_2 conversion*

P38* **Tomecka Daria** (ePotentia*) Quantifying the statistical fidelity of generative AI in materials physics: a multi-dimensional validation framework*

P39* **Weber Leo** (UNamur) *Plasmon-enhanced OLED efficiency: a finite-element modeling investigation*

P54 **Simon Ganne** (Universiteit Gent*) DFT+TN: A new method to accurately model complex materials from first principles*

Fundamental interactions, gravitational, theoretical and mathematical physics

P40 **Kieler Maximilian** (Université de Liège) *Semiclassical foundation of universality in chaotic quantum circuits*

P41* **Renck Louis** (Université de Liège) *Classical counterpart to the Hubbard model through an exact path-integral formalism*

Biological, medical and statistical physics

P42* **Fritsche Florent** (UMONS) *Shape-dependent NMR relaxivity of magnetic nanoparticles: from diffusion regimes to a predictive model*

P43* **Meeus Branko** (UHasselt) *Stochastic impedance in non-equilibrium systems*

P44* **Vanoppen Gijs** (UHasselt) *Should you put a ring on it? Or should you get sticky with it? Comparing electrical homogeneity in nanoring and nanostick networks*

Particle physics and nuclear physics

P45 **Ahmad Osama** (KU Leuven) *Hyperfine anomaly studies in gold isotopes at CRIS*

P46 **Chiñas Fuentes Karina** (Universiteit Gent) *Accelerating Bayesian data integration for online tungsten concentration inference in fusion plasmas*

P47 **Tobias Christen** (KU Leuven) *MR-ToF assisted laser spectroscopy*

P48* **De Henau Vital** (Vrije Universiteit Brussel) *Investigating double bump air showers with the SKA*

P49 **Fajardo Zambrano Carlos Mario** (KU Leuven) *Molecules as probes of nuclear structure: laser spectroscopy of ^{223}RaF*

P50* **Geeraerts Dora** (Vrije Universiteit Brussel) *The ScIDEP muon radiography project at the Egyptian pyramid of Khafre*

P51* **Hussain Majid** (UCLouvain) *First study of the Dee integration, module testing and noise performance of one endcap of CMS phase - II outer Tacker system*

P52 **Kayaalp Arda** (KU Leuven) *Collinear laser spectroscopy of germanium isotopes at IGISOL*

P53* **Magnus Else** (Vrije Universiteit Brussel*) A time-offset stacking search for neutrino emission associated with gamma-ray bursts*

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