

Channeling 2026: *Advance Program*

Sunday, 20 September - Ex Convento Santa Chiara

"CHANNELING PRIMER"

Ex Convento Santa Chiara

15:30-15:50 **Prof. Sultan Dabagov**, Opening. Channeling: Steps for One Life

15:50-16:00 - **Prof. Angela Bracco** (SIF President), Greetings from SIF

16:00-16:30 - **Prof. Alberto Lusiani**, Final measurement of Muon g-2 at Fermilab (*Invited*)

16:30-17:00 - **Dr. Simona Giovannella**, Status and Prospects for the Mu2e experiment (*Invited*)

17:00-17:30 - **Prof. Toshiki Tajima**, Acceleration in Crystals and Nanostructures (*Invited*)

18:00-19:30 - **Welcome drink at the Ex Convento Santa Chiara**

Monday, 21 September - Palazzo Granafei-Nervegna

S1: Beams Interactions

Session S1.1 **Chair: S. Dabagov**

8:30-9:00 **V. Nagaslaev**

Crystal channeling for the beam loss mitigation in slow extraction at 8 GeV (*Invited*)

9:05-9:20 **V. Guidi**

Evidence of fine structure within the channeling peak

9:25-9:40 **A. Sytov**

Overview of recent implementations of coherent effects in oriented crystals into Geant4 and BDSim simulation toolkits

9:45-10:00 **M. Zielinska**

Performance of crystal collimation with ion beams in the LHC Run 3

10:05-10:20 **N. Canale**

High-sensitivity polarimetric mapping: a non-destructive diagnostic tool for residual stress in silicon crystals

10:25-10:40 **M. Romagnoni**

Development and Characterization of Bent Silicon Crystals for Beam Shadowing in the Mu2e Slow-Extraction Line

Coffee break

Monday, 21 September - Palazzo Granafei-Nervegna

S2: Radiations: Generation & Interactions

Session S2.1

Chair: F. Zimmermann

11:00-11:30 **H. Deng**

The Past, Present, and Future of SHINE (*Invited*)

11:35-12:05 **P. Fedeli**

Experimental validation of the first electromagnetic calorimeter based on oriented crystals
(*Invited*)

12:10-12:25 **G. Wang**

Proposal of terawatt-attosecond X-ray pulses from an efficient fresh-slice multi-stage free-electron laser

12:30-12:45 **K. Lasocha**

Status and plans for optical Cherenkov Diffraction Radiation studies at CERN

12:50-13:05 **K. Pakuza**

Absolute validation of ChDR simulations with electron beams

Lunch break

Monday, 21 September - Palazzo Granafei-Nervegna

S1 & S3: Beams Interactions. Applications & X-Rays

Session S1.2/S3.1

Chair: Y. Hayakawa

14:30-15:00 **L. Foggetta**

The Beam Test Facility at INFN-LNF: capabilities for crystal-channeling experiments
(Invited)

15:05-15:20 **M. Bay**

Development and test beam validation of a Multi Volume Reflection Array for crystal shadowing at the CERN SPS

15:25-15:40 **L. Giuliano**

C-Band 24 MeV prototype of a LINAC for FLASH radiotherapy

15:45-16:00 **T. Bakhshiyani**

Accelerators in Yerevan as a tool for generating relevant medical isotopes

16:05-16:20 **F. Sirghi**

Advanced X-ray detectors and new technologies for Kaonic Atom Spectroscopy

16:25-16:40 **G. Margaryan**

Analysis of radiation generated by a pair of electron bunches passing a dielectric ball via multiple modelling techniques

16:45-17:00 **M. Coreno**

MOST. The Molecular Optical Science and Technology Beamline: A tool for in-depth investigations in chemistry and physics @Elettra2.0

Coffee break

17:20-18:00

Poster Session PS1

Chair: Yu. Cherepennikov

- PS1-01 On the Efficiency of the Grinenko-Shul'ga Mechanism for Deflecting High-Energy Negatively Charged Particles by an Axially Oriented Bent Crystal *by Kyryllin et al*
- PS1-02 Geant4 Monte Carlo optimization for crystal channeling based positron source *by Mahdipour et al*
- PS1-03 Investigation of Particle Identification Capabilities in an Electromagnetic Calorimeter Based on Oriented Crystals *by Tralli et al*
- PS1-04 Designing Bent Silicon Crystals via Coactive Thin Films for High-Energy Beam Manipulation *by Hamza et al*
- PS1-05 Radiation of twisted photons from relativistic electrons in a multicolor laser wave *by Bragin et al*
- PS1-06 Radiation from positrons channeled in the system of fan-oriented half-wavelength Si crystals *by Tukhfatullin et al*
- PS1-07 Laser beam depletion in Compton source *by Gavrilenko et al*
- PS1-08 Positive particle dechanneling in high atomic number crystals *by Moskvitin et al*
- PS1-09 Manipulating initial electron distributions in RF photoguns to tailor the properties of the generated radiation *by Vladimirov et al*
- PS1-10 Bubble Merging in Laser Wakefield Acceleration as a Way Towards High-Charge 1-GeV Class Electron Beams *by Ul Haq et al*
- PS1-11 A new X-ray method for determining the dynamic characteristics of dislocations generated in an interferometer block-crystal *by Mkhitarian et al*
- PS1-12 Relativistic fermion in a dielectric capillary *by Dik et al*
- PS1-13 Non-Mechanical Electrical Signal Spiral Tracing for Continuous Visible Analog Recording *by Voskanyan et al*
- PS1-14 Coherent effects in atomic K-shell ionization by relativistic ultrashort electron bunches in light-element targets *by Skorobohatov et al*
- PS1-15 The Importance of Quasars for Understanding the Structure of the Universe *by Sedrakyan et al*
- PS1-16 Features of Spectral-Angular Distribution of Radiation by a Train of Electron Bunches Passing Through the Center of a Conductive Ball *by Markosyan et al*

PS1-17 Analysis of Spontaneous Radiation during Channeling of Fast Charged Particles along the Main Crystallographic Axes of Fluorite-Structured Crystals *by Maksyuta et al*

PS1-18 Muonium Formation during the Channeling of Antimuons in Hexagonal Crystals *by Maksyuta et al*

18:00-18:30

Discussion

Tuesday, 22 September - Palazzo Granafei-Nervegna

S1: Beams Interactions

Session S1.3 **Chair: V. Guidi**

8:00-8:30 **A. Mazzolari & V. Guidi**

Channeling, Volume Reflection and Beam Steering with Bent Crystals (*Invited*)

8:30-9:00 **M. Boscolo**

Status of the FCC project (*Invited*)

9:05-9:20 **X. Li**

CNN-Based automated neutron dosimetry for high-throughput diagnostics in accelerator and channeling experiments

9:25-9:40 **M. Bondarenco**

Quantum tunneling and above-barrier reflection of high-energy positively charged particles in oriented crystals

9:45-10:00 **S. Trofymenko**

Orientation effects in ionization loss and characteristic X-ray radiation of high-energy protons, electrons and positrons in silicon crystals

10:05-10:20 **V. Vysotskii**

Quantum-consistent mechanism for self-suppression of dechanneling of moving charged particles in a crystal

10:25-10:40 **A. Stepanov**

Molecular-dynamics modeling of charged nanoparticle interaction with a solid surface

Coffee break

Tuesday, 22 September - Palazzo Granafei-Nervegna

S1: Beams Interactions

Session S1.4 **Chair: L. Bandiera**

11:00-11:30 **F. Alharthi**

Advances in the FCC-ee crystal-based positron source (*Invited*)

11:35-12:05 **G. Paterno**

Observation of intense radiation emission by ultrarelativistic electrons and positrons stochastic deflection in an axially oriented bent crystal (*Invited*)

12:10-12:25 **I. Nam**

Enhanced brightness of gamma-ray, positron from a laser wakefield accelerator using an oriented crystal

12:30-12:45 **A. Curcio**

Polarization effects in the energy loss and linear energy transfer of charged particles in matter

12:50-13:05 **V. Tikhomirov**

On the polarization of positrons arising during their channeling radiation in bent crystals

Lunch break

Tuesday, 22 September - Palazzo Granafei-Nervegna

S2: Radiations: Generation & Interactions

Session S2.2

Chair: L. Giuliano

14:30-15:00 **A. Solovyov**

Breakthroughs within the Horizon Europe EIC-Pathfinder project TECHNO-CLS: Emerging technologies for crystal-based gamma-ray light sources (*Invited*)

15:05-15:20 **L. Bandiera**

Experimental evidence for MeV undulator radiation from ultrarelativistic positrons in a periodically bent crystal

15:25-15:40 **W. Lauth**

Channeling experiments with electrons and positrons at the Mainz Microtron MAMI

15:45-16:00 **H. Backe**

Observation of narrow-band γ radiation from a boron-doped diamond superlattice with an 855 MeV electron beam

16:05-16:20 **R. Negrello**

High-Intense gamma-ray emission from a crystalline undulator with realistic bending profiles

16:25-16:40 **A. Savchenko**

Full scale simulation of electron beam evolution in a ring Compton source

16:45-17:00 **P. Shapovalov**

Generation of intense X-ray Cherenkov radiation in gas jets on storage rings

Coffee break

17:20-18:00

Poster Session PS2

Chair: Yu. Cherepennikov

- PS2-01 On the Spontaneous Radiation of Weakly Relativistic Electrons Channeled in a Wurtzite Crystal and the Influence of the Piezoelectric Effect *by Maksyuta et al*
- PS2-02 On the Dynamic Enhancement of the Focusing Effect during Channeling of Fast Neutral Atoms in Non-Chiral Carbon Nanotubes *by Maksyuta et al*
- PS2-03 Preservation of Long-Range Crystal Structure in L-Valine-Modified α -LiIO₃: Evidence from X-ray Diffraction *by Bezhanova et al*
- PS2-04 Characteristics of Radio Galaxies and Quasars Located at the Centers of Extended Radio Sources in Relation to the Structure of the Universe *by Voskanyan et al*
- PS2-05 Possible channeling of ions in a natural self-healing quasi-crystalline water lattice formed by clathrate hydrates in water volume near the controlling periodic structure *by Vysotskii et al*
- PS2-06 X-ray Analysis of Archaeological Metal Jewellery from Excavations in Armenia *by Cherepennikov et al*
- PS2-07 Cherenkov Diffraction Radiation versus Diffraction Radiation from a Dielectric Prism: A Comparative Study *by Cherepennikov et al*
- PS2-08 Remote control ball *by Manukyan et al*
- PS2-09 Hybrid-Electric Propulsion and Crystalline Materials for Next-Generation Aircraft: A Conceptual Framework *by Sahakyan et al*
- PS2-10 A crystal-based positron source for FCC-ee - Simulations and experimental results *by Paterno et al*
- PS2-11 Experimental Study of Optical Properties and Band Gap Variation in α -LiIO₃ Crystals Assisted with L-Valine Amino Acid *by Danghyan*
- PS2-12 Development and characterization of bent crystal analyzers for high-resolution X-Ray spectroscopy *by Cescato et al*
- PS2-13 Influence of Transport Codes on Proton Energy Assignment in Stacked-Foil Activation Experiments *by Hovahannisyan et al*
- PS2-14 Nonadiabatic energy transfer during low-energy ion channeling in single-walled carbon nanotubes *by Stepanov et al*
- PS2-15 X-ray Cherenkov radiation in an ionized medium *by Shapovalov et al*

- PS2-16 Operational experience with TWOCRIST and future prospects of double-crystal fixed-target setups at HL-LHC. *by Maccani et al*
- PS2-17 Improved planar-channelling models for symplectic tracking in circular colliders *by Iliopoulou et al*
- PS2-18 Theoretical study of the influence of an external magnetic field on the Fraunhofer diffraction of electromagnetic waves on an intermedia gap at oblique incidence *by Soghomonyan et al*

18:00-18:30

Discussion

Wednesday, 23 September - Palazzo Granafei-Nervegna

S2: Radiations: Generation & Interactions

Session S2.3

Chair: A. Curcio

8:30-9:00 **A. Schiavi**

Application of ionizing radiation (charged particles, photons, and neutrons) for cancer therapy and diagnostic imaging (*Invited*)

9:05-9:20 **V. Kotanjyan**

Radiation of surface polaritons by a charged particle moving along a helical trajectory around a cylindrical waveguide

9:25-9:40 **D. Gavrilenko**

Thomson Backscattering in coherent regime

9:45-10:00 **Y. Hayakawa**

Preliminary study on radiators for parametric X-ray radiation using SiC single-crystals

10:05-10:20 **V. Kocharyan**

Alternative Sources of Monochromatic X-Ray Radiation Based on Combined TR and PXR Mechanisms

10:25-10:40 **D. Garayev**

Smith-Purcell radiation from a cluster of interacting subwavelength particles

10:45-11:00 **H. Harutyunyan**

On Coherent Radiation from Pair of Electron Bunches Moving Along the Waveguide Axis Filled with Periodic Medium

Sightseeing Tour

Thursday, 24 September - Palazzo Granafei-Nervegna

W1: NanoAc Workshop

Session W1.1

Chair: J. Lopez

8:30-9:00 **J. Lopez**

The NanoAc Proposal: Current Status and Next Steps (*Invited*)

9:05-9:20 **B. Lei**

Resonant Excitation of Surface Plasmon for Wakefield Acceleration by Beating GW Lasers on Smooth Cylindrical Surface

9:25-9:40 **A. Bonatto**

Modeling and optimization of LFWA in nanostructured solid-state targets

9:45-10:00 **J. Zhang**

Machine-Learning-Based Parameter Optimisation for Laser Wakefield Acceleration in CNT Targets

10:05-10:20 **B. Qiao**

Generation of Polarized High-Energy Electron Beams in the Bubble Regime via Nested-Wake Injection

10:25-10:40 **G. Sotnikov**

Transportation of Ramped Bunch Train in a Layered Plasma Wakefield Accelerator

Coffee break

Thursday, 24 September - Palazzo Granafei-Nervegna

W1: NanoAc Workshop

Session W1.2

Chair: A. Bonatto

11:00-11:30 **G. Xia**

The Advanced Wakefield Experiment (AWAKE) at CERN: From Concept to Experiment and Future Applications (*Invited*)

11:35-12:05 **T. Yu**

Relativistic Mid-Infrared Light Sources Generated in Laser-Driven Magnetized Gas Plasmas (*Invited*)

12:10-12:25 **S. Wen**

Impact of Longitudinal Current Profiles on Beam Loading in Externally Injected Laser Wakefield Acceleration

12:30-12:45 **J.P. Garrido**

Crystal Radiators for Accelerators

12:50-13:05 **J.R. Perez**

Experimental opportunities at ELI

Lunch break

Thursday, 24 September - Palazzo Granafei-Nervegna

W1: NanoAc Workshop

Session W1.3

Chair: G. Xia

14:30-15:00 **B. Shen**

Positron acceleration with transition radiation driven (*Invited*)

15:05-15:20 **Y. Liu**

Inverse Cherenkov dielectric laser accelerator based on transverse bunching control for relativistic particles

15:25-15:40 **A. Sytov**

Beat-wave Acceleration at the Tip of Endoscope

15:45-16:00 **H. Saberi**

Tailoring Betatron Radiation through Periodic Plasma Density Structures

16:05-16:20 **D. Giulietti**

Laser-Plasma Acceleration: Coherence Effects in Betatron Radiation

16:25-16:55 **M. Behtouei**

Analytical and Numerical Study of Capillary Discharge for Laser Plasma Wakefield Acceleration (*Invited*)

17:00-17:15 **A. Sytov**

The Italian Role in the NanoAc Collaboration: from target fabrication to laser-facility beam tests

17:20-18:00 **Round Table**

20:00 **Social Dinner**

Friday, 25 September - Palazzo Granafei-Nervegna

S3: Applications & X-Rays

Session S3.2

Chair: G. Cavoto

8:30-9:00 **A. Perez**

Advances in X-ray detection: Novel strategies for improving image quality in medical applications (*Invited*)

9:05-9:20 **Yu. Cherepennikov**

Experimental Multimodal X-ray Imaging of 3D-Printed Tissue-Mimicking Samples

9:25-9:40 **A. Avetisyan**

Comperative Study of AgTOEPyP4/DNA complexes under X-ray and Electron Beam Irradiation

9:45-10:00 **A. Mazzolari**

Bonded bent crystals for accelerators, synchrotron X-ray optics and Laue lenses

10:05-10:20 **D. Hampai**

The Art of Glass: a Journey on Polycapillary Optics Fabrication

10:25-10:40 **I. Ergunov**

Multiprecision Monte Carlo Simulation of X-Ray Coherence in Multichannel Capillary Optics: Where Coherence Survives

Coffee break

Friday, 25 September - Palazzo Granafei-Nervegna

S1 & S3: Beams Interactions. Applications & X-Rays

Session S1.5/3.3

Chair: V. Kotanjyan

11:00-11:30 **H. Sarkisyan**

Charge carriers tunneling through the quantum dot lattices (*Invited*)

11:35-12:05 **P. Dattoli**

A Neutrino Facility for Accelerator Science, nuclear deterrence and International Cooperation (*Invited*)

12:10-12:25 **A. Arestakyan**

Comparison of the Effects of Proton Irradiation on Hybrid and Inorganic Perovskite Layers

12:30-12:45 **M. Teklehawariyat**

Microchannel-Plate Meta-Lenses for Compact Confocal Microscopy at Soft X-ray Wavelengths

12:50-13:05 **M. Piras**

Micro-XRF Characterization of Brake and Tire Wear Particles from Euro 6 Hybrid Passenger Cars

Lunch break

Friday, 25 September - Palazzo Granafei-Nervegna

S4: *Etcetera*

Session S4.1

Chair: D. Hampai

14:30-15:00 **E. Di Palma**

Theory of a Geomagnetic free electron laser: a FEL perspective to magnetospheric chorus emission (*Invited*)

15:05-15:20 **A. Badalyan**

Structural and Optical Properties of $CsPbBr_3$ Perovskite Thin Films Subjected to Proton Irradiation

15:25-15:40 **V. Hovhannisyan**

A Statistical Investigation of the Structure of the Universe Based on the Distribution of Quasars Around Giant Radio Sources

15:45-16:00 **A. Saharyan**

Inverter-Free Solar Charging: A Direct DC and Climate-Resilient Highway Infrastructure

16:05-16:20 **A. Voskanyan**

On the Required Quantitative and Qualitative Requirements for Supposed Integrated Territorial Earthquake Early Warning System and its Optimal Algorithms for Armenia

Channeling 2026: Closing

Chair: S. Dabagov
