

## Event Agenda

# ICFDT8

# *8<sup>th</sup> International Conference on Frontiers in Diagnostics Technologies*

**Frascati, 19-21 October 2026**

ENEA Frascati Research Centre  
Seminar Room (Building F23) Bruno Brunelli





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lun 19 ottobre

09:15

09:30

09:30

Welcome and conference opening

Sessione | Sede: Frascati, Sala Bruno Brunelli , Building F23 Via Enrico Fermi 45, 00044 Frascati, Rome

Imaging and medical application

Sessione | Sede: Frascati, Sala Bruno Brunelli , Building F23 Via Enrico Fermi 45, 00044 Frascati, Rome

09:30-10:00

CHEMINFORMATICS AND HYPERSPECTRAL IMAGING FOR ILLICIT DRUG INTELLIGENCE: TOWARD A STANDARDIZED FRAMEWORK FOR NPS AND COMPLEX MIXTURE ANALYSIS

Relatore

giuliano iacobellis

10:00-10:20

How Multimodal Imaging Is Redefining Precision Medicine

Relatore

Francesca Palermo

10:20-10:40

Beyond Absorption: New Detector Concepts for Spectral, Phase-Contrast, and Time-Resolved X-ray Imaging

Relatore

Ralf Hendrik Menk

10:40

10:40

Coffee Break

Pausa | Sede: Frascati, Leonardo Pieroni

11:10

11:10

Inertial fusion

Sessione | Sede: Frascati, Sala Bruno Brunelli , Building F23 Via Enrico Fermi 45, 00044 Frascati, Rome

11:10-11:30

Diagnostics for Inertial Fusion Beyond NIF and OMEGA

Relatore

Thomas Cowan

11:30-11:50

Laser interaction with foam targets for the generation of laser-driven sources of particles and radiation for diagnostics of plasma

Relatore

Sebastian Busch

11:50-12:10

Applications and potential of XFEL radiation for foams and hydrodynamic instabilities

Relatore

Victorien Bouffetier

12:10-12:30

X-ray Phase Contrast Imaging in Inertial Fusion Experiments

|       |                                                                                                                                                                                                                                                                                                        |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12:30 | <div> <div>Relatore</div> <div>Xu Zhao</div> </div>                                                                                                                                                                                                                                                    |
| 12:30 | <div> <div> <b>Fusion products</b> </div> <div> <b>Sessione</b>   <b>Sede:</b> Frascati, Sala Bruno Brunelli , Building F23 Via Enrico Fermi 45, 00044 Frascati, Rome         </div> </div>                                                                                                            |
| 13:10 | <div> <div>12:30–12:50</div> <div> <b>The High-Resolution Neutron Spectrometer at ITER</b> </div> <div> <div>Relatore</div> <div>Anders Hjalmarsson</div> </div> </div>                                                                                                                                |
| 13:10 | <div> <div> <b>Lunch</b> </div> <div> <b>Pausa</b>   <b>Sede:</b> Frascati, Leonardo Pieroni         </div> </div>                                                                                                                                                                                     |
| 14:10 | <div> <div> <b>Industrial and cold plasmas</b> </div> <div> <b>Sessione</b>   <b>Sede:</b> Frascati, Sala Bruno Brunelli , Building F23 Via Enrico Fermi 45, 00044 Frascati, Rome         </div> </div>                                                                                                |
| 14:10 | <div> <div>14:10–14:30</div> <div> <b>From Discharge Physics to Reactive Chemistry: an Integrated Diagnostic Path to Plasma Agriculture.</b> </div> <div> <div>Relatore</div> <div>Domenico Aceto</div> </div> </div>                                                                                  |
| 14:50 | <div> <div>14:30–14:50</div> <div> <b>The Modular Diagnostics Platform (MDP): A Standardized, Port-Integrated Architecture for Utility-Scale Fusion Plasma</b> </div> <div> <div>Relatore</div> <div>Georgy Subbotin</div> </div> </div>                                                               |
| 14:50 | <div> <div> <b>Cultural heritage</b> </div> <div> <b>Sessione</b>   <b>Sede:</b> Frascati, Sala Bruno Brunelli , Building F23 Via Enrico Fermi 45, 00044 Frascati, Rome         </div> </div>                                                                                                          |
|       | <div> <div>14:50–15:20</div> <div> <b>Advanced Spectroscopic Characterization Across Diverse Cultural Heritage Materials: A Synergistic Approach Using LIF, Raman, LIBS, and Multi- and Hyperspectral Imaging</b> </div> <div> <div>Relatore</div> <div>Valeria Spizzichino</div> </div> </div>        |
|       | <div> <div>15:20–15:40</div> <div> <b>Multi-analytical non-destructive approach for the study of Iron Age swords from Torre Galli necropolis at UniCal STAR facility</b> </div> <div> <div>Relatore</div> <div>Riccardo Cristoforo Barberi</div> </div> </div>                                         |
|       | <div> <div>15:40–16:00</div> <div> <b>Application of Raman micro-spectroscopy and confocal optical microscopy for monitoring and supporting the conservation/consolidation strategies of ancient papers</b> </div> <div> <div>Relatori</div> <div>Francesca Bonfigli, Sabina Botti</div> </div> </div> |

16:00-16:20

## AI-assisted conservation of Korean paintings and radiation-accelerated aging of the painting substrates

**Relatore**

Gunsu YUN

16:20

16:20

### Poster session A

**Poster Session** | Sede: Frascati, Corridor

#### Machine Learning-Assisted Structural Diagnostics of the DTT Vacuum Vessel Through Modal Reconstruction

**Relatore**

Gabriele Liuzzo

#### Irradiation cavity of the GENeUSIS Neutron Assembly

**Relatore**

Marta Damiano

#### Simulation study of a compact D-T neutron spectrometer based on a single-crystal CVD diamond stack using Geant4

**Relatore**

Longyong Liao

#### Multi-Instrument Spectral Classification of Psychotropic Substances Using Machine Learning model

**Relatore**

Alessandro Puleio

#### Optimized AI analysis of vibration data for damage assessment of structures

**Relatore**

Ivan Roselli

#### Fiber Optic Sensor Networks for Continuous Structural Monitoring of Water Pipeline Bridges: Data Analysis and Scalability

**Relatore**

Davide Vicca

#### A Neural Network Approach for DTT Plasma Profile Reconstruction validated on data-driven TCV kinetic surrogates

**Relatore**

Tayyaba Sajid

#### A multi-window neural-network model for line-profile-based temperature estimation in low-temperature plasma optical emission diagnostics

**Relatore**

Natalja Zorina

#### Cross-border radiological emergency planning: ARIES software simulation and GIS mapping of projected dose for an accident scenario at the Krško nuclear power plant

**Relatore**

Federico Mancinelli

17:15

## DAIMoND: Development of an AI-Monitored Neutron Diagnostic

### Relatore

Matteo Hakeem Kushoro

16:20

## FBG Based Structural Health Monitoring for the Conservation of the Ponari Nymphaeum

### Relatore

Cristina Mazzotta

16:50

## Cryogenic response of Distributed Optical Fiber Sensor coatings under cyclic thermal shocks

### Relatore

Emilia Di Micco

17:15

## coffe break

**Pausa** | **Sede:** Frascati, Leonardo Pieroni

## Short Orals

**Sessione** | **Sede:** Frascati, Sala Bruno Brunelli , Building F23 Via Enrico Fermi 45, 00044 Frascati, Rome

17:15-17:25

### The Motion Magnification for large historical and modern structures

#### Relatore

VINCENZO FIORITI

17:25-17:35

### Soft X-rays detection for plasma temperature measurement at the ABC laser facility

#### Relatore

Leonardo Manzoni

17:35-17:45

### Electro-optical probing for electromagnetic pulses measurements in laser-matter interaction

#### Relatore

Benoist Grau

17:45-17:55

### Digital Pulse-Processing Electronics for Fusion Diagnostics: Performance and Perspectives across Neutron and Plasma Detectors

#### Relatore

Matteo Bianchini

17:55-18:05

### Prototype of a remote LIBS system for the chemical characterization of tungsten-based PFCs

#### Relatore

Salvatore Almaviva

18:05

## mar 20 ottobre

09:00

### Precision Measurement

**Sessione** | **Sede:** Frascati, Sala Bruno Brunelli , Building F23 Via Enrico Fermi 45, 00044 Frascati, Rome

09:00–09:20

#### Towards Four-Dimensional Particle Detection: Spatial and Temporal Precision with Gas Detectors and Emerging MPGD Technologies

##### Relatori

Gianfranco Morello, Marco Poli Lener

09:20–09:40

#### High-Precision Laser Ranging: From Lunar Reflectors to the GUEST Mission

##### Relatore

Nicolò Burzillà

09:40–10:00

#### Advanced diagnostic techniques for a 4 ppm measurement of the antihydrogen Ground-State Hyperfine Splitting in the ALPHA experiment at CERN

##### Relatore

Germano Bonomi

10:00

10:00

### Fusion machines (including subtopics on: measurements of temperature and density; DTT and East tokamaks)

**Sessione** | **Sede:** Frascati, Sala Bruno Brunelli , Building F23 Via Enrico Fermi 45, 00044 Frascati, Rome

10:00–10:20

#### Closing the Loop: Why Fusion Power Demands a New Diagnostic Blueprint

##### Relatore

Alexandru Boboc

10:20–10:40

#### Bayesian inference for data integration and diagnostic optimization in fusion devices

##### Relatore

Geert Verdoolaege

10:40

10:40

### Coffee Break

**Pausa** | **Sede:** Frascati, Leonardo Pieroni

11:10

11:10

### Precision Measurement

**Sessione** | **Sede:** Frascati, Sala Bruno Brunelli , Building F23 Via Enrico Fermi 45, 00044 Frascati, Rome

11:10–11:30

#### From Conventional to Cutting-Edge: A Journey Through Free-Electron Lasers and the Plasma Frontier

##### Relatore

Alessio Del Dotto

11:30-11:50

**Diagnostic technologies in high-sensitivity experiments to detect ultra-rare events****Relatore**

Giovanni Mazzitelli

11:50

11:50

**Fusion machines (including subtopics on: measurements of temperature and density; DTT and East tokamaks)****Sessione** | **Sede:** Frascati, Sala Bruno Brunelli , Building F23 Via Enrico Fermi 45, 00044 Frascati, Rome

11:50-12:10

**Overview of the DTT diagnostic systems****Relatore**

Filippo Bagnato

12:10-12:30

**Progress on the DTT Interferometric and Polarimetric Diagnostics****Relatore**

Donatella Fiorucci

12:30-12:50

**Neutron and runaway electron diagnostics for first plasma DTT operation****Relatore**

Daniele Marocco

12:50

12:50

**Lunch****Pausa** | **Sede:** Frascati, Leonardo Pieroni

13:50

13:50

**AI in support of diagnostics****Sessione** | **Sede:** Frascati, Sala Bruno Brunelli , Building F23 Via Enrico Fermi 45, 00044 Frascati, Rome

13:50-14:10

**Deep Learning for data driven understanding and control of complex systems****Relatore**

Andrea Murari

14:10-14:30

**The rise of the agents in Earth Observation****Relatore**

Salvatore Pinto

14:30-14:50

**Optimising the layout of tomographic diagnostics with Genetic Programming****Relatore**

Ivan Wyss

14:50-15:10

**Integrating magnetic and kinetic measurements in the equilibrium reconstruction of tokamaks with Physics Based Neural Networks****Relatore**

Novella Rutigliano

15:10-15:30

**TokaLab: an open-access and open-source FAIR framework for tokamak synthetic diagnostics and inverse problems benchmarking****Relatore**

Riccardo Rossi

15:30-15:50

**AI-ENHANCED I&C FOR HYBRID FISSION-FUSION REACTOR CONTROL****Relatore**

Mauro Cappelli

15:50-16:00

**Improving the time resolution of bolometric tomography in TCV with modelling of AXUV-diodes****Relatore**

Valentina D Agostino

16:00

16:00

**Coffee Break****Pausa** | **Sede:** Frascati, Leonardo Pieroni

16:30

16:00

**Poster session B****Poster Session** | **Sede:** Frascati, Corridor**Development and recent progress of advanced plasma diagnostics on Thailand Tokamak-1****Relatore**

Siriyaoporn Sangaroon

**Beyond Single-Model Langmuir Probe Analysis: Cross-Regime Diagnostics for RF, ECR and Fusion-Relevant Plasma Sources****Relatore**

Giuseppe Castro

**Maximum Likelihood SXR Tomography Inversion Framework for JT-60SA: Development and Initial Assessment Towards MHD Studies****Relatore**

Emmanuele Peluso

**Implementation of innovative magnetic field sensors on DTT, COMPASS-U and DEMO/VNS tokamaks****Relatore**

Dominik Najman

**LIBRA: A New Free-Boundary MHD Equilibrium Code for the Analysis of PROTO-SPHERA Plasma Configurations****Relatori**

Daniele Iannarelli, Francesco Napoli

**Solution-Processed Perovskite Radiation Detectors for X-ray Diagnostics****Relatore**

Amir Khan

**Design and manufacturing of the Modular Diagnostic Platform prototype**

**Relatore**

Antoine Sirinelli

**Overview of DTT magnetic diagnostic****Relatore**

Giovanni Artaserse

**Simulations of expected spectra from charge exchange reactions between impurity ions and a Diagnostic Neutral Beam in the DTT tokamak****Relatori**

Emma Amadou, Filippo Bagnato

**Generation of Synthetic Radiation Patterns for Tomographic Studies in DTT Plasmas****Relatore**

Emmanuele Peluso

**Study for combined Second and Third Harmonic dispersion interferometry for plasma density measurement****Relatore**

Francesco Filippi

**An unconventional non-invasive device for monitoring low-energy ion beams****Relatore**

Grazia D'Agostino

**Energy diagnostics of the TOP-IMPLART linac proton beam using radiophotoluminescent Bragg curves in lithium fluoride detectors****Relatore**

Enrico Nichelatti

17:00

17:00

**Short Orals****Sessione** | **Sede:** Frascati, Sala Bruno Brunelli , Building F23 Via Enrico Fermi 45, 00044 Frascati, Rome

17:00-17:10

**Side-on GEMPix detector characterization for charged-particles tracking via  ${}^6\text{Li}$  reaction products at n\_TOF****Relatore**

Gerardo Claps

17:10-17:20

**Simultaneous O- and X-mode plasma probing with a shared dual-polarisation reflectometer front-end: a full-wave feasibility study****Relatore**

Filipe da Silva

17:20-17:30

**MiniTRUST: A UNITUS-ASIPP China Collaboration for Tokamak Engineering and Magnetic Diagnostics****Relatore**

Matteo Notazio

17:30-17:40

**Design of a Diamond Camera for TCV**

**Relatore**

Silvia Cesaroni

17:40-17:50

**Effects of fast particles on plasma polarimetry in high performance fusion plasmas****Relatore**

francesco paolo orsitto

17:50-18:00

**Spatio-Temporal Deep Learning for Particle Discrimination in Timepix3 Detectors: a Diagnostic Tool for the AI Era****Relatore**

Francesco Cordella

18:20

## mer 21 ottobre

09:00

### Environmental applications and safety

**Sessione** | **Sede:** Frascati, Sala Bruno Brunelli , Building F23 Via Enrico Fermi 45, 00044 Frascati, Rome

09:00-09:20

#### RISK ANALYSIS EVALUATION TO IMPROVE THE RADIATION PROTECTION SYSTEM IN ITALY IN CASE OF A RADIOLOGICAL DISPERSAL DEVICE OR NUCLEAR DEVICE EXPLOSION

##### Relatore

Andrea Malizia

09:20-09:40

#### THz-TDS diagnostic for WEST tokamak, status and future plans

##### Relatore

Giuseppe Galatola Teka

09:40

09:40

### Fusion machines (including subtopics on: measurements of temperature and density; DTT and East tokamaks)

**Sessione** | **Sede:** Frascati, Sala Bruno Brunelli , Building F23 Via Enrico Fermi 45, 00044 Frascati, Rome

09:40-10:10

#### Density measurements for high power magnetic confinement fusion

##### Relatore

George Vayakis

10:10-10:30

#### Divertor Ion Temperature Profile Measurements at DIII-D with RFEA and PIC-Enhanced Interpretation

##### Relatore

Bingzhe Zhao

10:30-10:50

#### Advances in Electron Density Calibration Techniques for the DIII-D Thomson Scattering Diagnostic

##### Relatore

Fabio Conti

10:50-11:00

#### Plasma density diagnostics and machine-learning jitter analysis for stable PWFA operation at SPARC\_LAB

##### Relatore

Romain Demitra

11:00-11:10

#### ECE and Thomson Scattering Diagnostics and their relation with the Electron Energy Distribution Function: Principles, Meanings, and Formulations.

##### Relatore

Luca Senni

11:10-11:20

## PHYSICS BASIS OF DISCREPANCIES BETWEEN MEASUREMENTS OF ELECTRON TEMPERATURE BY ECE AND THOMSON SCATTERING AND IMPACT ON THE TEMPERATURE DIAGNOSTICS FOR FUSION MACHINES

**Relatore**

francesco paolo orsitto

11:20

11:20

## Coffee Break

**Pausa** | **Sede:** Frascati, Leonardo Pieroni

11:40

11:40

## Fusion machines (including subtopics on: measurements of temperature and density; DTT and East tokamaks)

**Sessione** | **Sede:** Frascati, Sala Bruno Brunelli , Building F23 Via Enrico Fermi 45, 00044 Frascati, Rome

11:40-12:00

## Lithium Beam Emission Spectroscopy for Turbulence Studies in the EAST Pedestal and Scrape-Off-Layer: Application and Upgrade to Sodium Beam

**Relatore**

Ran CHEN

12:00-12:10

## Progress in the Development of Diagnostics for Plasma-Wall Interaction in EAST

**Relatore**

Rong Yan

12:10-12:20

## Research Progress of the Polarimeter/Interferometer on the EAST and BEST Tokamak

**Relatore**

SHOUXIN Wang

12:20-12:30

## Recent Progress in Intelligent Processing of Multimodal Diagnostic Data from the EAST Tokamak

**Relatore**

Ting Lan

12:30-12:40

## Development of a Novel Twin Collinear Optically Pumped Far-Infrared Laser

**Relatore**

Jibo Zhang

12:40-12:50

## Preliminary Comparison of High Electron Temperature Measurements by TS and ECE on EAST under EC and LHW Heating

**Relatore**

yiqun LI

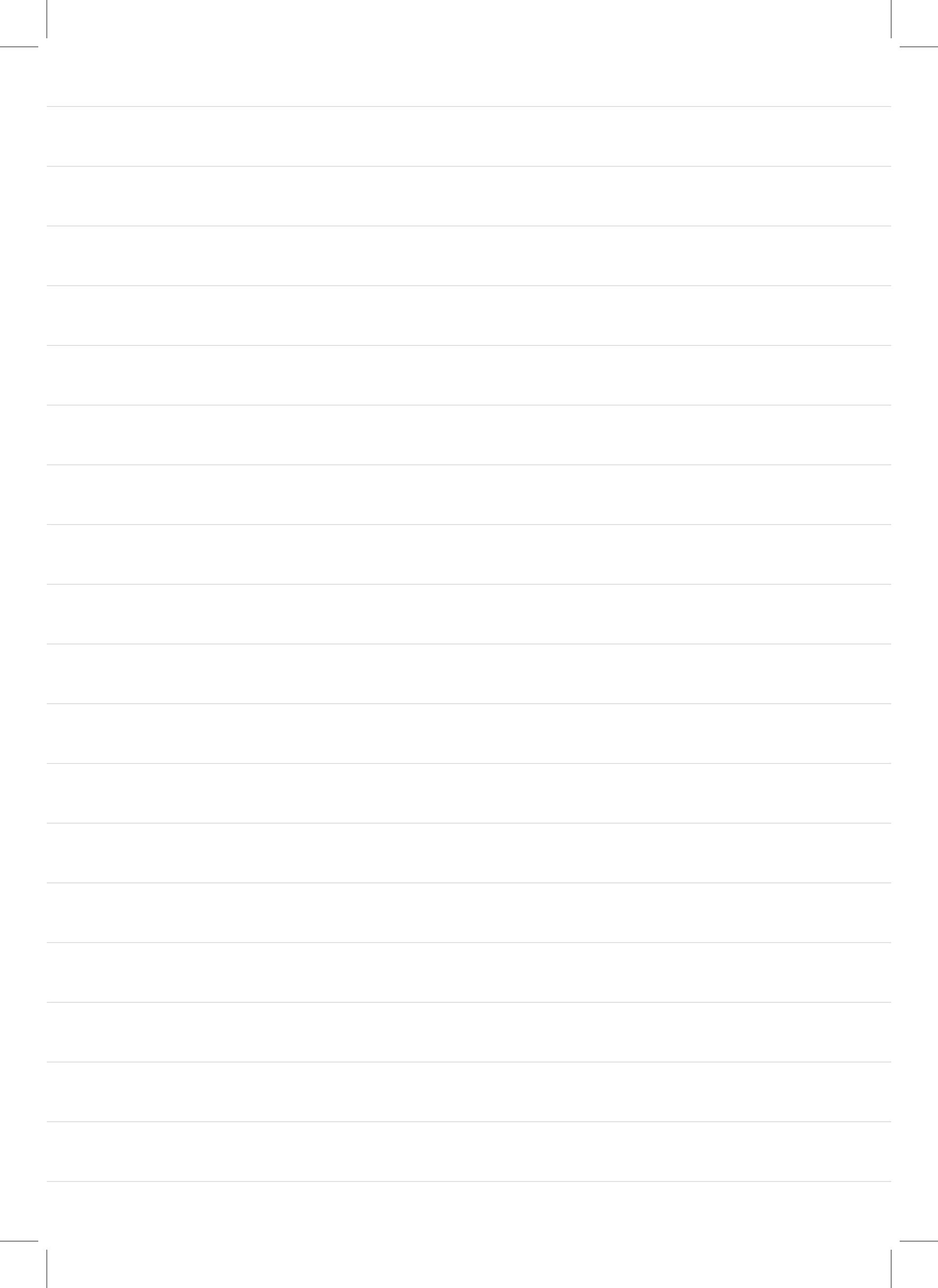
12:50-13:00

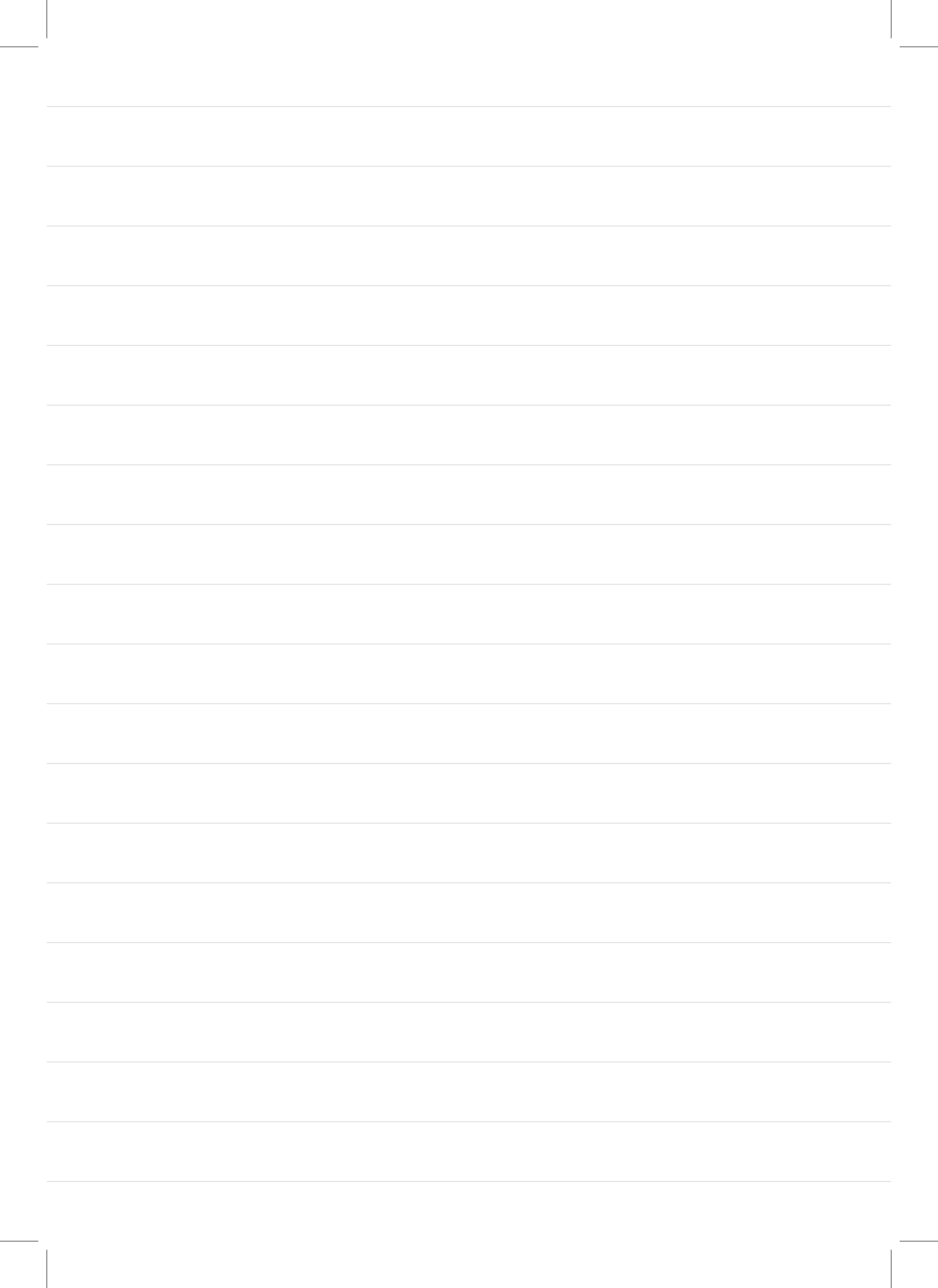
## Development of a dual vertical Thomson scattering diagnostic system on EAST

**Relatore**

Yan LI

|       |                                                                                                                                                             |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
|       | <div>13:10-13:20</div> <b>Application of a Near-Infrared Camera on the EAST Tokamak</b><br><b>Relatore</b><br>wenxue fu                                     |
| 13:30 | <div>13:20-13:30</div> <b>yefan.zhu Title to be confirmed</b><br><b>Relatore</b><br>yefan zhu                                                               |
| 13:30 |                                                                                                                                                             |
| 14:30 | <b>Lunch break</b><br><b>Pausa</b>   <b>Sede:</b> Frascati, Leonardo Pieroni                                                                                |
| 14:30 |                                                                                                                                                             |
| 15:30 | <b>Round table</b><br><b>Sessione</b>   <b>Sede:</b> Frascati, Sala Bruno Brunelli , Building F23 Via Enrico Fermi 45, 00044 Frascati, Rome                 |
| 15:30 |                                                                                                                                                             |
| 16:30 | <b>Phd Prize and Closing talks</b><br><b>Sessione</b>   <b>Sede:</b> Frascati, Sala Bruno Brunelli , Building F23 Via Enrico Fermi 45, 00044 Frascati, Rome |







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