Training on Neutron Techniques

TNT – Training on Neutron Techniques

Neutron Diffraction and Imaging

San Giovanni in Valle Aurina (BZ, Italy) 13 -21 June 2025

PRELIMINARY PROGRAM

Friday 13th

14.00 - 18.00	Students' arrival
18.00 -19.00	Welcome Reception
19.00 – 20.30	Dinner
20.30 -21.00	School Presentation SISN President Greetings

Saturday 14th

INTRODUCTION & NEUTRON SCATTERING

8.30 -10.00	Mathematics methods for Neutron Scattering	Dr. Alessio De Francesco
10.00 -10.30	Coffee Break	
10.30 - 12.00	Theory of Neutron Scattering	Prof. Eleonora Guarini (Prof. Renato Magli)
12.00 - 13.30	Lunch	
13.30 - 15.00	Neutron Sources: REACTOR	Dr. Christian Reiter *t.b.c.*
15.00 -15.30	Coffee Break	
15.30 – 16.30	Neutron Sources: SPALLATION	Dr. Lina Quintieri
16.30 – 17.30	From the source to beamline (INST. 1)	Dr. Lina Quintieri
18.00 - 19.00	Free Time	
19.00 - 20.30	Dinner	

Sunday 15th

NEUTRON DIFFRACTION

8.30 -10.00	Elements of Crystallography	Prof. Luca Lutterotti *t.b.c.*
10.00 -10.30	Coffee Break	
10.30 - 12.00	Single Crystal Diffraction	Dr. Silvia Capelli
12.00 - 13.30	Lunch	
13.30 - 15.00	Powder Diffraction	Dr. Thomas Hansen
15.00 -15.30	Coffee Break	
15.30 - 16.30	Diffraction in Disordered Systems	Dr. Ubaldo Bafile
16.30 – 17.30	PDF	Dr. Gabriel Cuello
17.30 -18.15	Neutron Diffraction Bullet Points & Neutron Diffraction Tutorials Presentation	Dr. Monica Ceretti
18.15 - 19.00	Free Time	
19.00 - 20.30	Dinner	

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Monday 16th

NEUTRON DIFFRACTION

8.30 – 9.15	Computer Simulation for Disordered System	Dr. Miguel Gonzales
9.15 – 10.00	Energy Materials ND (APPL. 1)	Dr. Monica Ceretti
10.00 -10.30	Coffee Break	
10.30 - 12.00	Magnetism	*t.b.c.*
12.00 - 13.30	Lunch	
13.30 - 14.30	ND beamlines, ND Detectors (INST. 2)	Dr. Antonella Scherillo
14.30 - 16.00	Neutron Diffraction Tutorials* • ND TUT. S. Crystal • ND TUT. Magnetism • ND TUT. Powder Full Proof • ND TUT. Powder GSAS • ND TUT. PDF • ND TUT. Disordered	• Dr. Silvia Capelli / Prof. Lutterotti *to b.c.* • *T.b.c.* • Dr. Thomas Hansen • Dr. Antonella Scherillo / Dr. Francesco Grazzi • Dr. Gabriel Cuello • Dr. Miguel Gonzales
16.00 -16.30	Coffee Break	
16.30 - 18.00	Neutron Diffraction Tutorials* • ND TUT. S. Crystal • ND TUT. Magnetism • ND TUT. Powder Full Proof • ND TUT. Powder GSAS • ND TUT. PDF** • ND TUT. Disordered	• Dr. Silvia Capelli / Prof. Lutterotti *t.b.c.* • *T.b.c.* • Dr. Thomas Hansen • Dr. Antonella Scherillo / Dr. Francesco Grazzi • Dr. Gabriel Cuello • Dr. Miguel Gonzales
18.00 - 19.00	Free Time	
19.00 - 20.30	Dinner	

Neutron Diffraction Tutorials*

* All students will be able to choose two diffraction hands-on tutorials dedicated to data analysis. The tutorials (about 3 hours) will be held on both June 16th and June 17th. Working groups will be organized with a suitable number to allow each student to be adequately trained. **NB. The PDF tutorial will be available only on June 16th.

Tuesday 17th

NEUTRON DIFFRACTION

8.30 – 9.30	Neutron Capture and Neutron Resonance with Application of NAA -MS & NRCA	Dr. Antonella Scherillo
9.30 – 10.15	Neutron Diffraction on metals artefacts: Heritage Science and Engineering applications (ND APPL..2)	Dr. Francesco Grazzi
10.15 -10.30	Coffee Break	
10.30 – 13.00	Neutron Diffraction Tutorials* • ND TUT. S. Crystal • ND TUT. Magnetism • ND TUT. Powder Full Proof • ND TUT. Powder GSAS • ND TUT. Disordered	• Dr. Silvia Capelli / Prof. Lutterotti *t.b.c.* • *T.b.c.* • Dr. Thomas Hansen • Dr. Antonella Scherillo / Dr. Francesco Grazzi • Dr. Miguel Gonzales
13.00 - 14.30	Lunch	
14.30 - 19.00	Free Time	
19.00 - 20.30	Dinner	

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Wednesday 18th

NEUTRON IMAGING

8.30 -10.00	**Neutron Imaging** Introductory lecture (from X ray to Neutron)	Dr. Nikolay Kardjilov
10.00 -10.30	Coffee Break	
10.30 - 12.00	NI beamlines, NI Detectors, & Beam Modifier (INST. 3)	Dr. Burkhard Schillinger
12.00 - 13.30	Lunch	
13.30 - 15.00	Energy Selective Neutron Imaging & Bragg Edge Analysis	Dr. Manuel Morgano
15.00 -15.30	Coffee Break	
15.30 - 16.30	Neutron Resonance Transmission Imaging (NRTI)	Dr. Anna Fedrigo
16.30 – 17.15	Neutron Imaging Bullet Points & Neutron Imaging Tutorials Presentation	Dr. Francesco Cantini
17.15 - 19.00	Free Time	
19.00 - 20.30	Dinner	

Thursday 19th

NEUTRON IMAGING

8.30 – 9.15	Polarized neutron	Dr. Nikolay Kardjilov
9.15 – 10.00	Grating and Phase contrast	
10.00 -10.30	Coffee Break	
10.30 - 12.00	Neutron Imaging Tutorials* ▪ NI TUT. White Beam Neutron Tomography ▪ NI TUT. Energy Selective / Bragg Edge Transmission Analysis ▪ NI TUT. ToF – Neutron Imaging (NRTI)	▪ Dr. Nikolay Kardjilov / Burkhard Schillinger ▪ Dr. Manuel Morgano ▪ Dr. Anna Fedrigo
12.00 - 13.30	Lunch	
13.30 - 15.00	Neutron Imaging Tutorials* ▪ NI TUT. White Beam Neutron Tomography ▪ NI TUT. Energy Selective / Bragg Edge Transmission Analysis ▪ NI TUT. ToF – Neutron Imaging (NRTI)	▪ Dr. Nikolay Kardjilov / Burkhard Schillinger ▪ Dr. Manuel Morgano ▪ Dr. Anna Fedrigo
15.00 -15.30	Coffee Break	
15.30 - 16.30	Introduction to Artificial Intelligence & Machine Learning	Prof. Uni Trento *t.b.c.*
16.30 - 18.30	AI & ML. (applications + general tutorial)	Dr. Jose Ignacio Robledo
18.30 - 19.00	Free Time	
19.00 - 20.30	Dinner	

Neutron Imaging Tutorials*

* All students will be able to choose two Neutron Imaging hands-on tutorials dedicated to data analysis. The tutorials (about 3 hours) will be held on both June 19th and June 20th. Working groups will be organized with a suitable number to allow each student to be adequately trained.

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Friday 20th

Saturday 21st

8.30 – 10.00	Neutron Imaging Tutorials* • NI TUT. White Beam Neutron Tomography • NI TUT. Energy Selective / Bragg Edge Transmission Analysis • NI TUT. ToF – Neutron Imaging (NRTI)	• Dr. Nikolay Kardjilov / Burkhard Schillinger • Dr. Manuel Morgano • Dr. Anna Fedrigo
10.00 -10.30	Coffee Break	
10.30 - 12.00	Neutron Imaging Tutorials* • NI TUT. White Beam Neutron Tomography • NI TUT. Energy Selective / Bragg Edge Transmission Analysis • NI TUT. ToF – Neutron Imaging (NRTI)	• Dr. Nikolay Kardjilov / Burkhard Schillinger • Dr. Manuel Morgano • Dr. Anna Fedrigo
12.00 - 13.30	Lunch	
13.30 – 14.15	How to propose a Neutron Experiment	Dr. Ferdinando Formisano
14.15 – 15.00	TNT 2025 Summary	SISN
15.00 -15.30	Coffee Break	
15.30 - 16.30	TNT 2026 /2027 CONCLUSION	SISN
16.30 – 19.00	Free Time	
19.00 - 20.30	Dinner	

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