



Trento Institute for  
Fundamental Physics  
and Applications



## SUMMER SCHOOL on Neutron Detectors and Related Applications NDRA-2016

**29<sup>th</sup> June – 2<sup>nd</sup> July, 2016.**  
**Riva del Garda, Trento, Italy.**



The aim of the school is to illustrate principles, methodologies and most recent applications of neutron detection technologies. In particular, the school will tackle various arguments that span from neutron interaction principles, materials for neutrons detectors, neutron sources, Monte Carlo simulation codes, up to applications with neutrons.

The school is addressed to PhD students, Post-Docs and young researchers with backgrounds in Engineering and Physics.

### TOPICS

- Neutron interaction with materials.
- Physics of neutron detectors.
- Materials for neutron detection.
- Monte Carlo simulation.
- Gas detectors for neutrons.
- Neutron sources.
- Application of neutron detectors.

## ORGANIZING COMMITTEE

**Marco Durante** (*INFN-TIFPA, Trento, Italy*) [Marco.Durante@tifpa.infn.it](mailto:Marco.Durante@tifpa.infn.it)

**Alberto Quaranta** (*Department of Industrial Engineering, University of Trento and INFN-TIFPA, Trento, Italy*) [Alberto.Quaranta@unitn.it](mailto:Alberto.Quaranta@unitn.it)

**Gian-Franco Dalla Betta** (*Department of Industrial Engineering, University of Trento and INFN-TIFPA, Trento, Italy*) [Gianfranco.Dallabetta@unitn.it](mailto:Gianfranco.Dallabetta@unitn.it)

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## FEES

Senior researchers      Before 1<sup>st</sup> June 375 €      After 1<sup>st</sup> June 450 €

Students      Before 1<sup>st</sup> June 275 €      After 1<sup>st</sup> June 350 €

A maximum of 60 registrations will be accepted. People who intend to join the school can preliminarily contact the organizing committee.

**LOCATION** - The school will be held at Astoria Park Hotel\*\*\*\*.

## WEBSITE

<http://webmagazine.unitn.it/en/evento/dii/7068/summer-school-on-neutron-detectors-and-related-applications>

## POSTER AND ORAL PRESENTATIONS

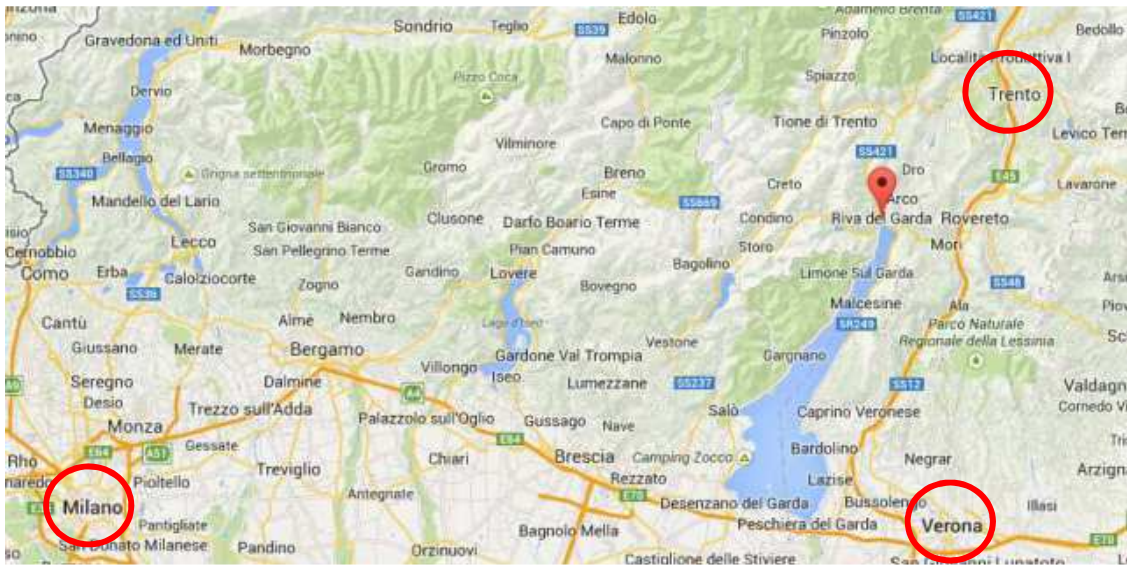
PhD and Post-Doc students are invited to present a poster with a short oral introduction during a dedicated session of the school. Abstract submission will be available soon.

## CONTRIBUTORS (Preliminary List)

The school is kindly supported by:

- TIFPA – INFN
- Department of Industrial Engineering – University of Trento
- INFN Committee 5 (GV)
- Scionix
- CAEN SpA

## HOW TO REACH RIVA DEL GARDA



### Motorway

A22, Brennero motorway, Rovereto sud exit: 15 minutes from the toll booth.

### By coach

Direct links from Trento and Rovereto (Trentino Trasporti buses); from Verona and Desenzano (A.P.T.V. buses); from Brescia and Milan (S.I.A. buses).

### By plane

- Verona Airport "Valerio Catullo" (recommended)
- Brescia Airport "Gabriele D'Annunzio"
- Bergamo Airport "Orio al Serio"
- Milano Airports "Malpensa" and "Linate"
- Venezia Airport "Marco Polo"

### By train

Nearest station is Rovereto (Brennero line) 20 km from Riva del Garda.

## Summer School on Neutron Detectors and Related Applications: NDRA-2016

Riva del Garda 29<sup>th</sup> June – 2<sup>th</sup> July 2016

### PROGRAM

#### Wednesday, 29<sup>th</sup> June

|             |  |
|-------------|--|
| 8.30-9.30   | Opening  |
| 9.30-10.30  | Zane Bell ( <i>Oak Ridge National Laboratory, USA</i> )<br><u>Neutron Interaction with Matter: Basics for Neutron Detection.</u>             |
| 10.30-11.00 | <i>Coffee Break</i>  |
| 11.00-12.00 | Zane Bell ( <i>Oak Ridge National Laboratories, USA</i> )<br><u>Neutron Interaction with Matter: Basics for Neutron Detection.</u>           |
| 12.00-13.00 | Marek Moszynski ( <i>National Centre for Nuclear Research, Poland</i> )<br><u>Organic and inorganic scintillators for Neutron Detection.</u> |
| 13.00-14.00 | <i>Lunch</i>   |
| 14.00-15.00 | Marek Moszynski ( <i>National Centre for Nuclear Research, Poland</i> )<br><u>Organic and inorganic scintillators for Neutron Detection.</u> |
| 15.00-16.00 | Paul Schotanus ( <i>Scionix-Nederlands</i> )<br><u>Production and testing of commercial scintillators.</u>                                   |
| 16.00-16.30 | <i>Coffee Break</i>  |

#### Thursday, 30<sup>th</sup> June

|             |   |
|-------------|---|
| 8.30-9.30   | Ralf Engels ( <i>Forschungszentrum Jülich, Germany</i> )<br><u>Design of Scintillator Detectors for neutrons.</u>         |
| 9.30-10.30  | Ralf Engels ( <i>Forschungszentrum Jülich, Germany</i> )<br><u>Design of Scintillator Detectors for neutrons.</u>         |
| 10.30-11.00 | <i>Coffee Break</i>   |
| 11.00-12.00 | Alfredo Ferrari ( <i>CERN, Switzerland</i> )<br><u>Monte Carlo Principles for Neutron Experiments.</u>                    |
| 12.00-13.00 | Alfredo Ferrari ( <i>CERN, Switzerland</i> )<br><u>Monte Carlo Principles for Neutron Experiments.</u>                    |
| 13.00-14.00 | <i>Lunch</i>  |
| 14.00-15.00 | Gregor Kramberger ( <i>Josef Stefan Institute, Ljubljana, Slovenia</i> )<br><u>Principles of Semiconductor Detectors.</u> |
| 15.00-16.00 | Gregor Kramberger ( <i>Josef Stefan Institute, Ljubljana, Slovenia</i> )<br><u>Principles of Semiconductor Detectors.</u> |

|                                      |   |
|--------------------------------------|---|
| 16.00-16.30                          | <i>Coffee Break</i>   |
| <i>Friday, 1<sup>st</sup> July</i>   |   |
| 8.30-9.30                            | Bruno Guerard ( <i>Institute Laue-Langevin, France</i> )<br><u>Gas Detectors for Neutrons.</u>  |
| 9.30-10.30                           | Bruno Guerard ( <i>Institute Laue-Langevin, France</i> )<br><u>Gas Detectors for Neutrons.</u>  |
| 10.30-11.00                          | <i>Coffee Break</i>   |
| 11.00-12.00                          | Peter Schillebeeckx ( <i>EC-JRC-IRMM, Belgium</i> )<br><u>Design and Analysis in Neutron Resonance Experiments.</u>   |
| 12.00-13.00                          | Peter Schillebeeckx ( <i>EC-JRC-IRMM, Belgium</i> )<br><u>Design and Analysis in Neutron Resonance Experiments.</u>   |
| 13.00-14.00                          | <i>Lunch</i>  |
| 14.00-15.00                          | Richard Hall-Wilton ( <i>European Spallation Source, Lund, Sweden</i> )<br><u>Neutron Sources.</u>  |
| 15.00-16.00                          | Richard Hall-Wilton ( <i>European Spallation Source, Lund, Sweden</i> )<br><u>Detectors for Spallation Sources.</u>   |
| 16.00-16.30                          | <i>Coffee Break</i>   |
| 16.30-19.00                          | Poster/Oral session.  |
| Oral Communication                   | Paolo Finocchiaro ( <i>INFN-LNS</i> ).<br><u>Recent results at nTOF: <math>^7\text{Be}(n,\alpha)</math> cross section measurements for the fixing of the problem of cosmological Lithium.</u> |
| 20.30                                | <b>SOCIAL DINNER</b>  |
| <i>Saturday, 2<sup>nd</sup> July</i> |   |
| 8.30-9.30                            | Stanislav Pospisil ( <i>Czech Technical University in Prague, Czech Republic</i> )<br><u>Production and detection of thermal neutrons.</u>  |
| 9.30-10.30                           | Stanislav Pospisil ( <i>Czech Technical University in Prague, Czech Republic</i> )<br><u>Detectors for Neutron Imaging.</u>   |
| 10.30-11.00                          | <i>Coffee Break</i>   |
| 11.00-12.00                          | Marco Durante ( <i>TIFPA, Italy</i> )<br><u>Neutrons in radiobiology.</u>   |
| 12.00-13.00                          | Marco Durante ( <i>TIFPA, Italy</i> )<br><u>Neutrons in space.</u>  |

|             |   |
|-------------|---|
| 13.00-14.00 | <i>Lunch</i>  |
| 14.00-15.00 | Giuseppe Gorini ( <i>University of Milano</i> )<br><u>Neutron measurements in fusion research</u> |
| 15.00-16.00 | Giuseppe Gorini ( <i>University of Milano</i> )<br><u>Neutron measurements in fusion research</u> |
| 16.00       | Closing   |