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## Introductory School on Renewable Energies (SIER), 4<sup>th</sup> edition, Udine 10-15 September 2018

The University of Udine, in collaboration with the University of Trieste and the ICTP (International Center for Theoretical Physics), is organising the 4<sup>th</sup> edition of the SIER, the Introductory School on Renewable Energies, 10 - 15 September 2018.

The school will be inaugurated at the prestigious setting of Palazzo Toppo Wasserman and will then continue in the Rizzi Educational Science Center. The school is intended primarily for students of scientific disciplines in their first three years.

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### Scientific Committee

Prof. Marina Cobal (Director- UniUd)  
Prof. Paolo Giannozzi (vice-Director- UniUd)

Prof. Marta Boaro (UniUd)  
Prof. Pietro Giannatasio (UniTs)  
Prof. Alessandro Massi Pavan (UniTs)  
Prof. Sandro Scandolo (ICTP)  
Prof. Andrea Vacchi (UniUd)  
Prof. Vanni Lughì (UniTs)

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### Organising Committee

Prof. Marta Boaro (UniUd)  
Dr. Marco Citossi (UniUd)  
Prof. Marina Cobal (UniUd)  
Prof. Paolo Giannozzi (UniUd)

Prof. Gilberto Giugliarelli (UniUd)  
Dr. Filippo Pascolo (UniUd)  
Prof. Piero Pinamonti (UniUd)  
Dr. Andrea Pizzariello (UniUd)

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### Syllabus

- Introductory seminar
- Renewable Energy Sources Lectures
- Solar Photovoltaic Lectures, Laboratory
- Solar thermal heating Lectures, Laboratory
- Wind Power Lectures, Laboratory
- Biomass Energy Lectures, Laboratory
- Hydroelectric Power Lectures, Laboratory
- Geothermal Energy Lectures, Laboratory
- Integration into Renewable Energy Sources Network



## Summary

The Summer School for Renewable Energy (ER) is aimed at both those who are approaching the topic of renewable energies for the first time and those who have already gained some experience. Through the combination of theoretical lessons and practical hands-on exercises, students will be provided with an up-to-date and comprehensive overview of the most important commercially viable renewable technologies, encompassing their operation and the various phases that led to their design and development. In addition, the school will present a review of renewable energy scenarios with particular attention to the latest market trends.

An important aspect will also be related to the orientation of the students towards the last two years of the Master Laurea.

## Activities

The program envisages the following issues in the ER sector to be explored:

- Basic principles and technical characteristics: state of the art and prospects;
- Renewable energies: solar (photovoltaic and thermal), hydroelectric, geothermal; from biomass and biofuels;
- Integration into the energy grid: regulatory and economic aspects;
- Overview of production and research activities in Friuli Venezia Giulia Region;
- Laboratory activities and guided tours to active plants in the Region.

## Development objectives

The main goal is to develop the participants' basic knowledge of the main sources of renewable energies, giving attention to various related aspects for each of the subjects presented (production, saving, transport, legislation, problematics involved etc.).

## Team leader



Prof. Marina COBAL

She started SIER with Prof. P. Giannozzi in 2015. Her research activities are mainly in the field of high energy physics, where she had a prominent role in several fundamental sub-

## Characteristics

The six-day school aims to introduce participants to the many aspects of renewable energies by providing a structured overview of the various sources of renewable energy:

- Identification
- Acquisition-production
- Application
- Storage
- Transport
- Transformation.

nuclear physics research projects using proton-(anti) proton accelerators (discovery of the top quark at the CDF experiment, and of the Higgs boson at the ATLAS experiment). Since 2015, she is the Italian National Responsible of the ATLAS Collaboration, which contains about 250 researchers. In recent years Marina has also developed a strong interest in the field of renewable energies