



## SFERA-III

### 1<sup>st</sup> Summer School

September, 9<sup>th</sup>- 11<sup>th</sup>, 2019

CNRS- PROMES, Odeillo, France

#### Location and dates :

The 1<sup>st</sup> Summer School of the SFERA-III project\* will be held from September 9<sup>th</sup> 8:00 am to September 11<sup>th</sup> 2019 2:00 pm at the premises of the CNRS-PROMES laboratory, 7 rue du Four Solaire, 66120 Font-Romeu FRANCE. The School is opened to researchers, especially early stage researchers, from both academia and industry.

#### Registration deadline :

To apply to the Summer School, you must complete the companion registration form and submit it before 12:00 pm (Paris time) by July 26<sup>th</sup> 2019 to Romie Lopez at [romie.lopez@promes.cnrs.fr](mailto:romie.lopez@promes.cnrs.fr). Your personal information and data will be treated as strictly confidential with respect to the principles of the General Data Protection Regulation (GDPR) (EU) 2016/679 and will be deleted no later than 2 months after the end of the event.

Please pay a special attention that submitting this form does not guarantee your attendance at the SFERA-III Summer School. Since the number of places is limited (80 places), all the forms will be reviewed in terms of order of inscription on first-come, first-served basis, but a minimum of 4 places will be guaranteed to each organization that is member of the SFERA-III project. A 2<sup>nd</sup> level selection of participants will take place afterwards to insure the heterogeneity of the participants (countries, maximum number of participants per organization, gender, type of organization and other). Further to the selection, the selected candidates will receive a confirmation email inviting them to join the event and providing further details on accommodation.

*\* This project has received funding from the European Union's Horizon2020 Research and Innovation programme under grant agreement n°823802*



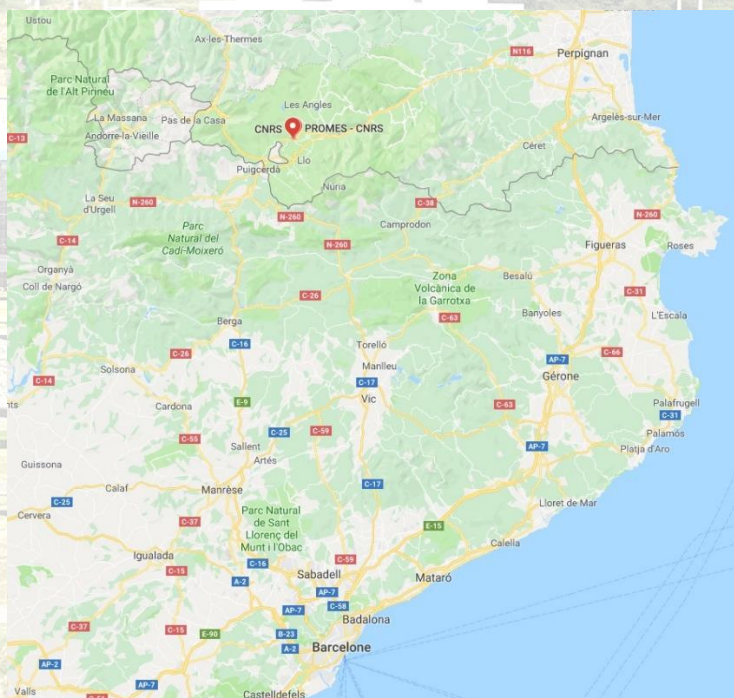
### Important information :

- *There are no registration / participation fees. However, all the travel, accommodation and food expenses must be covered by the participants.*
- *Registration will be held from 8:00 am to 8:45 am on September 9<sup>th</sup>, 2019 at the premises of the PROMES laboratory. A name badge will be delivered to you and an attendance sheet will be provided for signature at your arrival.*
- *The lunches will be served at the CNRS-PROMES laboratory's restaurant. Please pay attention that the total amount of the lunches should be paid the first day of the event by the participant in cash to restaurant responsible Didier Rives. The tariff by lunch is 12.77 €. Your food preferences / allergies / intolerances will be taken into account within the application form.*
- *Coffee breaks will be offered by CNRS-PROMES laboratory.*
- *A buffet will be offered by CNRS on Monday September 9<sup>th</sup> evening.*

### Accommodation :

*A non-exhaustive list of hotels and restaurants (for evening meals) will be provided before late July on the project website. Please wait for the confirmation of your registration acceptance before booking your hotel.*

### Access to CNRS/PROMES (Font-Romeu, France) :



#### From Barcelona international airport (recommended) :

2h30' driving

or 3h15' by train to Puigcerda (Spain/France border) and taxi to Font-Romeu

#### From Perpignan airport (domestic flights only) :

1h30' driving

or shuttle to bus/train station in Perpignan city and 2h by bus from Perpignan city to Font-Romeu



**September 9<sup>th</sup>-11<sup>th</sup>, 2019**

## **Summer School**

***“Thermal energy storage systems, solar fields and new cycles for future CSP plants”***

### **Organizers**

*CNRS and University of Evora*

### **Chairs**

*Alain Ferrière, CNRS-PROMES & Diogo Canavarro, University of Evora*

## **Program**

### **Day 1 : Monday, September 9<sup>th</sup>, 2019**

- 9:00 am Welcome address, by Alain Dollet (CNRS). Introduction of the School, by Alain Ferrière (CNRS) & Diogo Canavarro (Univ. Evora)
- 9:15 am Introductory talk, by Alain Ferrière (CNRS)  
**“The CSP technologies: market status and opportunities for R&D”**
- 10:00 am *Coffee break*
- 10:30 am Thermal Energy Storage - Class 1, by Eduardo Zarza (CIEMAT)  
**“TES for solar thermal power plants: introduction, commercial systems, integration issues and latent heat”**
- 11:30 am Thermal Energy Storage - Class 2, by Anna Chiara Tizzoni/Salvatore Sau (ENEA)  
**“Novel molten salts for TES application in CSP plants”**
- 12:00 am *Lunch at CNRS restaurant*
- 2:00 pm Thermal Energy Storage - Class 3, by Sylvie Rougé (CEA)  
**“Thermochemical TES: challenges and issues”**
- 2:45 pm Thermal Energy Storage - Class 4, by Pierre Garcia (CEA)  
**“TES performance assessment”**
- 3:30 pm *Coffee break*
- 4:00 pm Thermal Energy Storage - Case study, by Shahab Rohani (Fraunhofer ISE)  
**“Lessons learned from a lab-scale thermocline storage”**
- 5:00 pm *End of 1<sup>st</sup> day session*
- 7:00 pm *Buffet offered by CNRS*



## **Day 2 : Tuesday, September 10<sup>th</sup>, 2019**

- 9:00 am      Introductory lecture, by Manuel Romero (IMDEA Energy)  
**“Next generation of CSP plants: technology developments and market opportunities”**
- 10:00 am      *Coffee break*
- 10:30 am      Collectors - Class 1, by Diogo Canavarro (Univ Evora)  
**“New concepts of line focus and point focus collectors”**
- 11:00 am      Collectors - Class 2, by Jose González-Aguilar (IMDEA Energy)  
**“New concepts of heliostats for solar tower systems”**
- 11:30 am      Collectors - Case study, by Shahab Rohani (Fraunhofer ISE)  
**“A design tool for heliostat field layout”**
- 12:30 pm      *Lunch at CNRS restaurant*
- 2:00 pm      Cycles - Introductory lecture, by Eduardo Zarza (CIEMAT)  
**“Thermodynamic cycles for CSP plants: state-of-the-art and challenges”**
- 3:30 pm      Cycles - Class 1, by Manuel Romero (IMDEA Energy)  
**“sCO<sub>2</sub> cycles for CSP plants: challenges and issues”**
- 4:00 pm      *Coffee break*
- 4:30 pm      Cycles - Class 2, by Daniel Benitez (DLR)  
**“Hybrid CSP-PV plants: examples of configurations and simulation using Greenius”**
- 5:30 pm:      *End of 2<sup>nd</sup> day session*

## **Day 3 : Wednesday, September 11<sup>th</sup>, 2019**

- 8:45 am      *Transfer to Themis solar tower platform in Targasonne*
- 9:00 am      **Visit of Themis solar tower platform (Targasonne)**
- 10:30 am      *Coffee break and transfer to Odeillo*
- 11:00 am      **Visit of CNRS solar facilities (Solar furnace/Odeillo)**
- 12:30 pm      *Lunch at CNRS restaurant*
- 2:00 pm      *End of the Summer School***