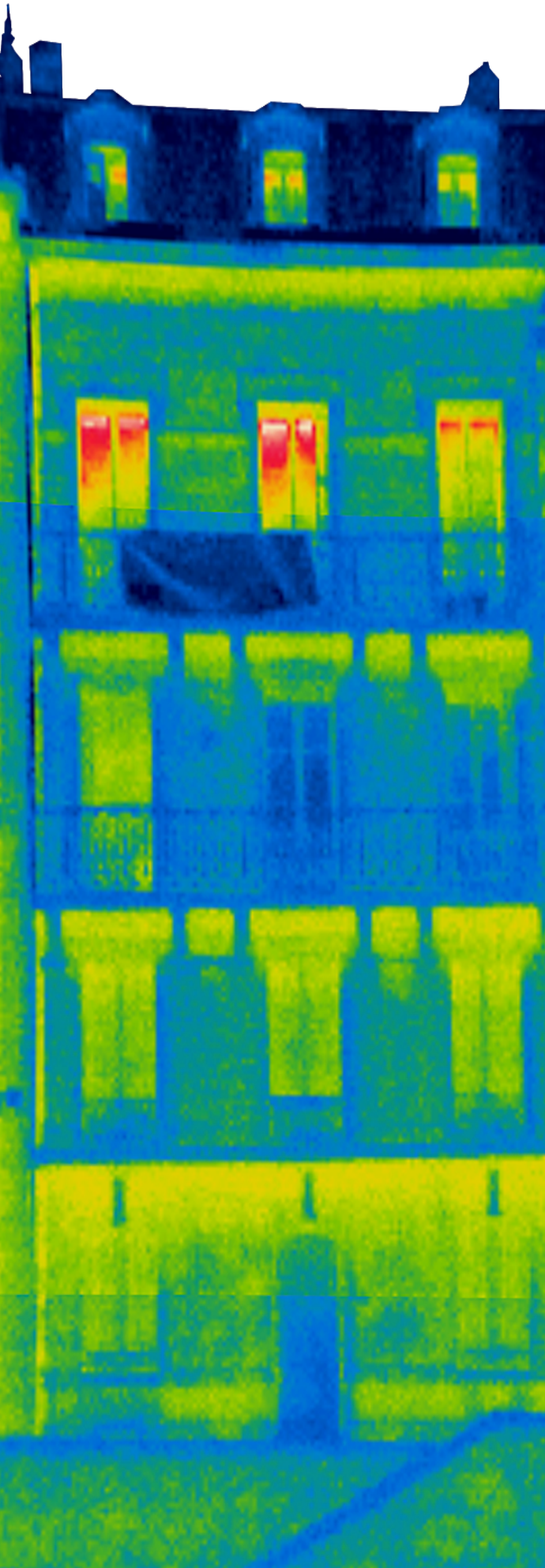


3rd Workshop on Architecture & Urban Physics



With the rapid increase of urban population, uncontrolled emissions of greenhouse gases and urban sprawl worldwide, urban physics has become a major topic of interest. Four relevant aspects of urban physics are: the construction of city **models**, the collection of **data** on existing environments, the **simulation** of the energy exchanges between the buildings and their environment and the postprocessing of results to obtain comprehensive **representations** of the physical phenomena involved. All of these aspects may induce a serious computational challenge, which is an active research subject.

The goal of this workshop is to present ongoing research works and discuss related topics as simulation and measurement methodologies, geometric modelling and visualization techniques for answering urban design issues.

MAIN TOPICS

- Geometric modeling from building to urban scale
- Environmental physics and urban climate
- Measured and simulated thermography
- Sustainable urban planning
- Finite Element Methods
- Daylighting

DATE AND PLACE

14th and 15th of February 2019

Lecture Hall, Building P4

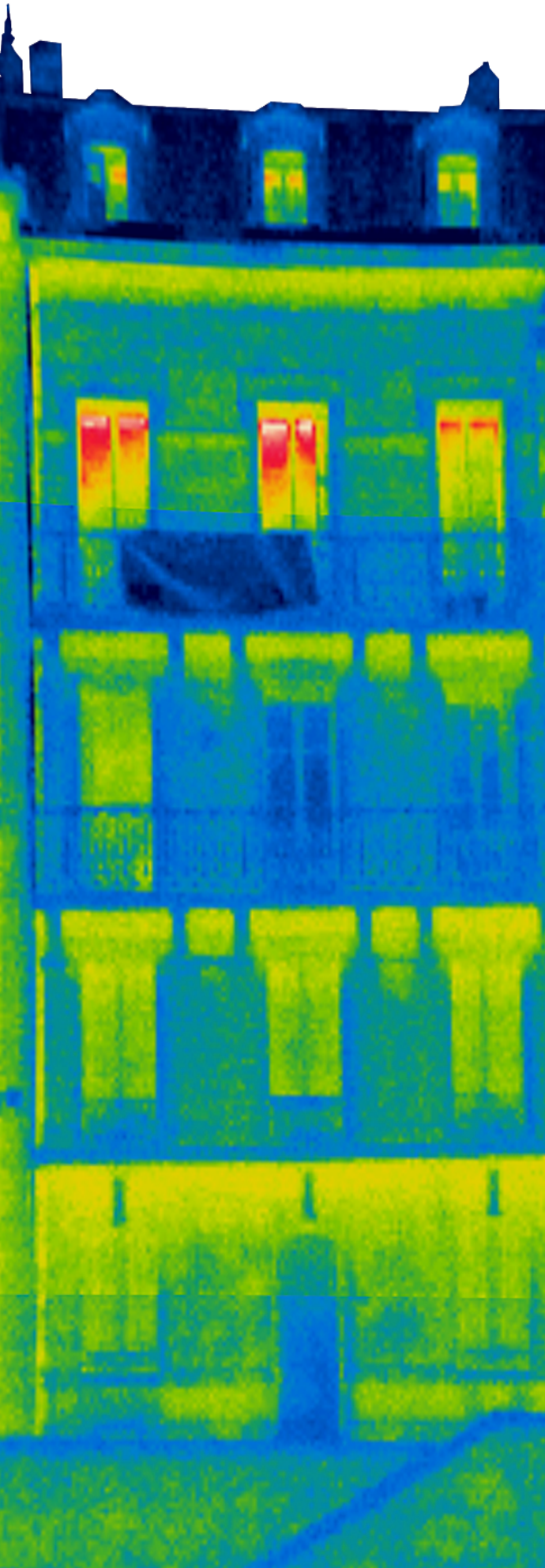
Escola Politècnica Superior - Universitat de Girona

ORGANIZERS

Gonzalo Besuievsky - Universitat de Girona (Spain),
gonzalo@imae.udg.edu

Benoit Beckers - Université de Pau et des Pays de l'Adour
(France), benoit.beckers@univ-pau.fr

3rd Workshop on Architecture & Urban Physics



Thursday, 14th FEBRUARY

9:00 INTRODUCTION

By G. Besuievsky (ViRVIG-UdG) & B. Beckers (UPPA).

9:20 Geometrical modelling for FEM calculations

- *Handling 3D model of a street for its thermal study with the finite element method*, by N. Duport (UPPA).
- *Dialogue between Computer Aided Design bricks and Isoparametric Finite Elements*, by B. Beckers (UPPA).
- *Level of Detail for shortwave simulations at street scale*, by A. Bugeat (UPPA).
- *An overview of Procedural modeling for city scale generation*, by G. Patow (ViRVIG-UdG).

10:40 COFFEE BREAK

11:00 Experimental tests cases at urban environments

- *Two test-cases to calibrate simulations at different urban scales: from the canyon to the block in Bayonne*, by J. Acuña (UPPA).
- *Reconstruction and inspection of 3D buildings*, by C. Andujar (ViRVIG-UPC)
- *Two ideas to test our ability to measure and simulate heat transfers on an urban scale*, by E. García-Nevado (UPPA).

12:00 Alternative methods for energy calculations

- *Speeding up the Monte Carlo method by using the GPU*, by Eduardo, by E. Fernández (Udelar).
- *Modelling of combined heat transfer with a statistical method: Application to infrared image synthesis*, by C. Caliot, Méso-star, S. Blanco and R. Fournier (CNRS).
- *A procedural technique for thermal simulation and visualization*, by D. Muñoz (ViRVIG-UdG).

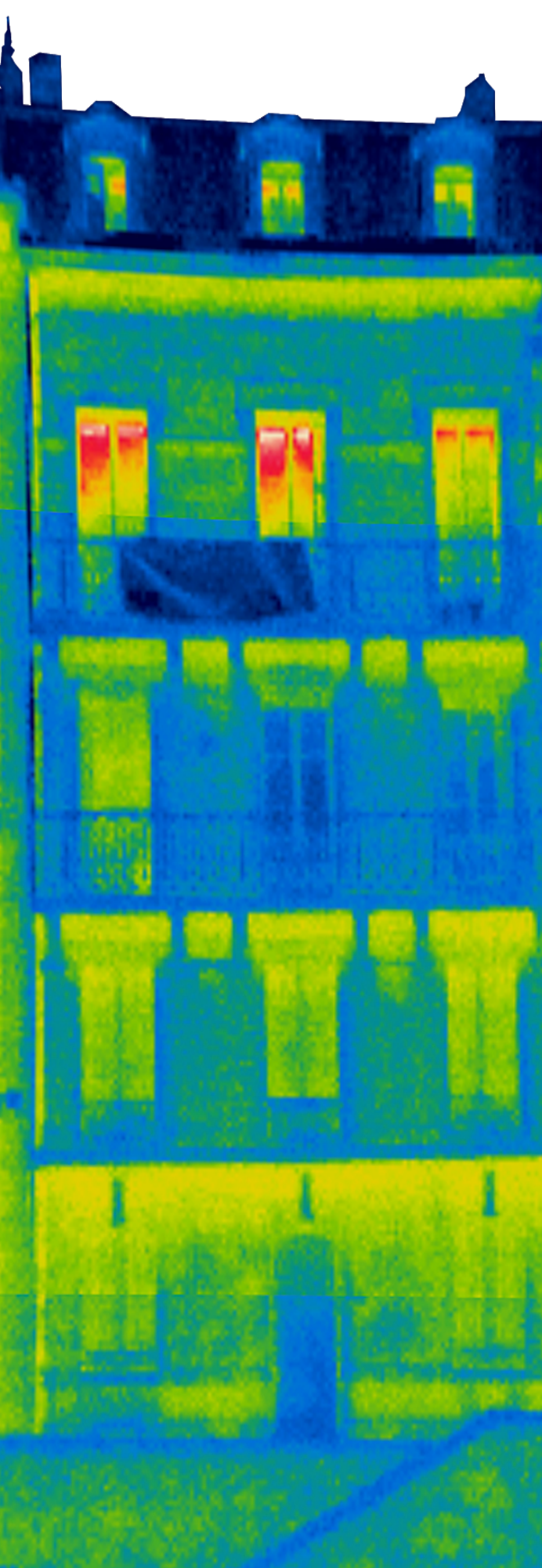
13:00 LUNCH BREAK

15:00 Describing the urban environment

- *Exploring the 3D radiant environment in an urban context - from sky modelling to on-the-ground representation*, by R. Nahon (UPPA).
- *Thermographic campaign in Montevideo: computational challenges*, by J. P. Aguerre (Udelar).
- *Designing more sustainable urban areas: from the local to the regional scale*, by D. Mauree (EPFL).

16:00 CLOSING & DISCUSSION

3rd Workshop on Architecture & Urban Physics



Friday, 15th FEBRUARY

9:30 Open meeting

Possible synergies between researchers about *on-going* and future works.

11:30 COFFEE BREAK

12:00 Coordinators meeting

- By G. Besuievsky (ViRVIG-UdG).
- G. Patow (ViRVIG-UdG).
- B. Beckers (UPPA).
- E. Fernández (Udelar)

13:00 LUNCH BREAK

15:00 Cultural visit

- *Barri Vell* de Girona