IACM-FORTH

Institute for Applied and Computational Mathematics

IACM at a glance

IACM-FORTH

- IACM-FORTH is the only independent research institute in Greece related to Applied Mathematics

- IACM-FORTH is one of the few independent institutes in Europe dedicated to promote the use of advanced mathematics in real life applications

Mission

IACM's mission is

- to address interdisciplinary challenges
- to promote research excellence

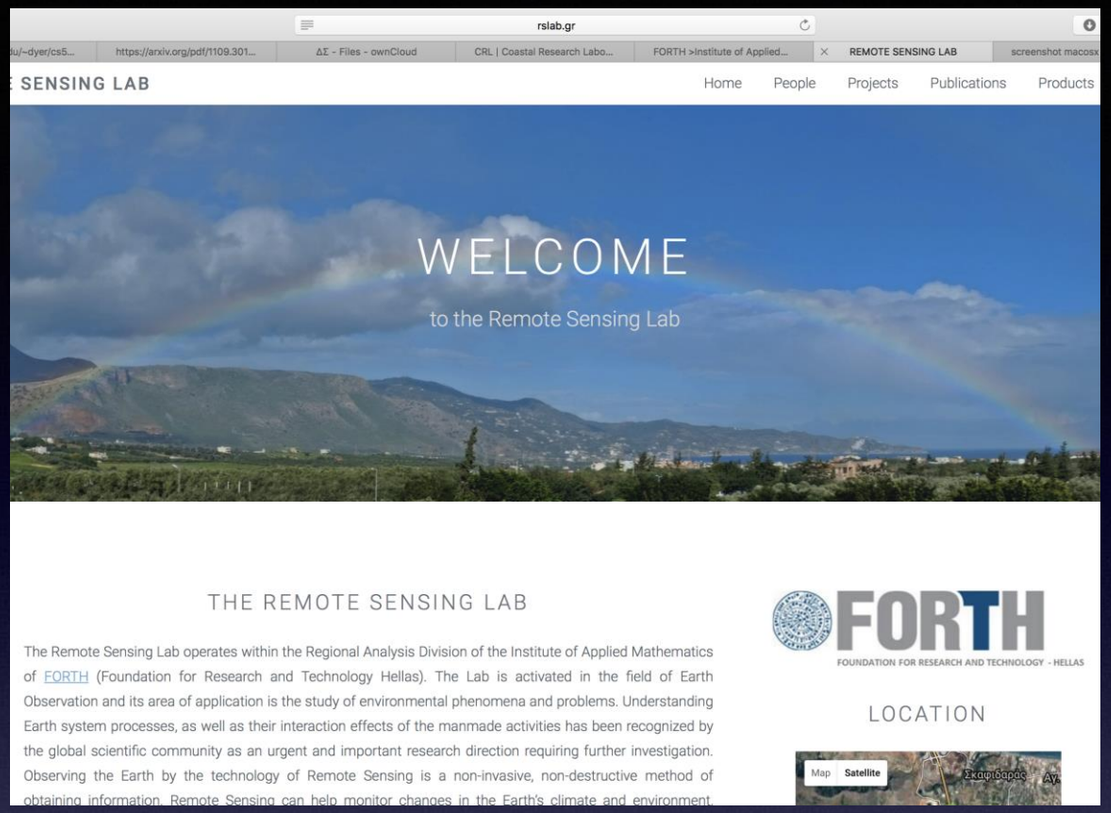
Members

- Permanent researchers
- Affiliated members: University Professors / Greeks of diaspora

Its members include leading researchers in HE institutions across Greece and abroad

Research Groups

- Complex Systems
- Wave Propagation
- Numerical Analysis-Computational Science
- Spatial analysis, Geographic Information Systems and Remote Sensing
- Computational Neurosciences
- Socio-education : Research and Innovation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SENSING LAB
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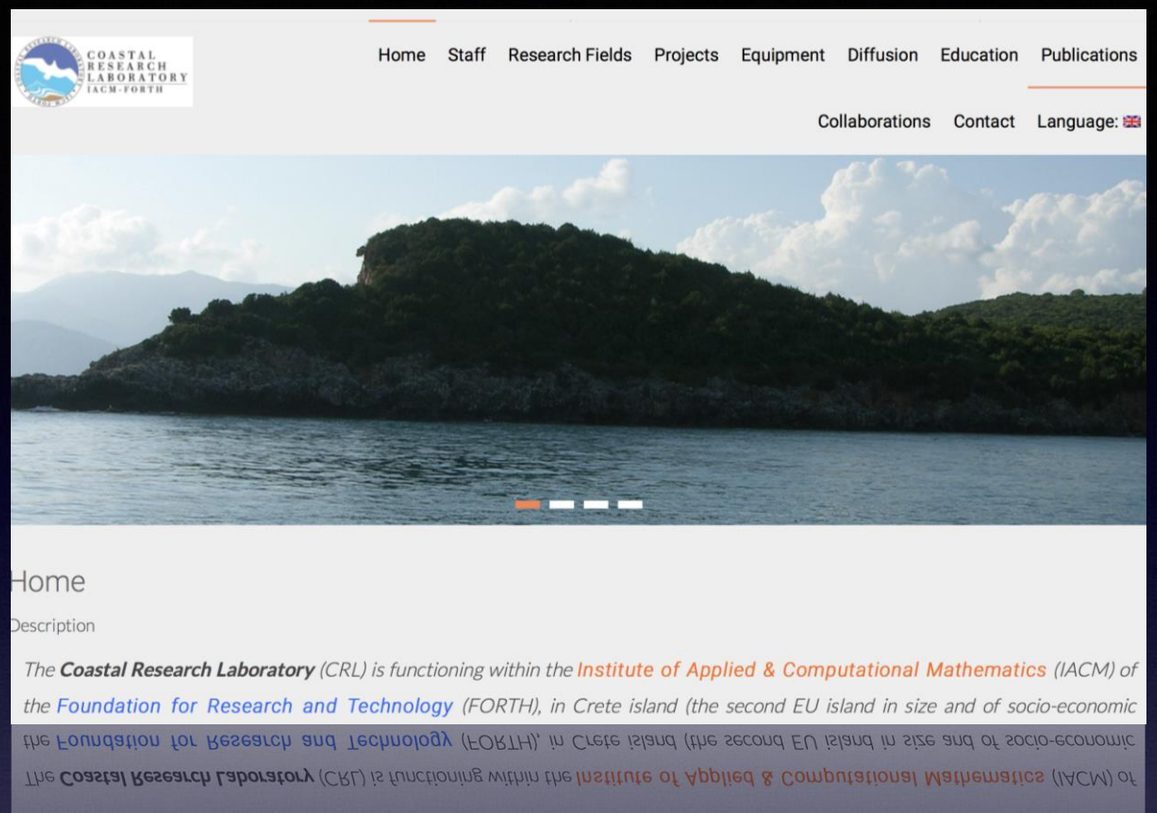
to the Remote Sensing Lab
THE REMOTE SENSING LAB
The Remote Sensing Lab operates within the Regional Analysis Division of the Institute of Applied Mathematics of FORTH (Foundation for Research and Technology Hellas). The Lab is activated in the field of Earth Observation and its area of application is the study of environmental phenomena and problems. Understanding Earth system processes, as well as their interaction effects of the manmade activities has been recognized by the global scientific community as an urgent and important research direction requiring further investigation. Observing the Earth by the technology of Remote Sensing is a non-invasive, non-destructive method of obtaining information. Remote Sensing can help monitor changes in the Earth's climate and environment.
FORTH
FOUNDATION FOR RESEARCH AND TECHNOLOGY - HELLAS
LOCATION
Map
Satellite


COASTAL RESEARCH LABORATORY
IACM-FORTH
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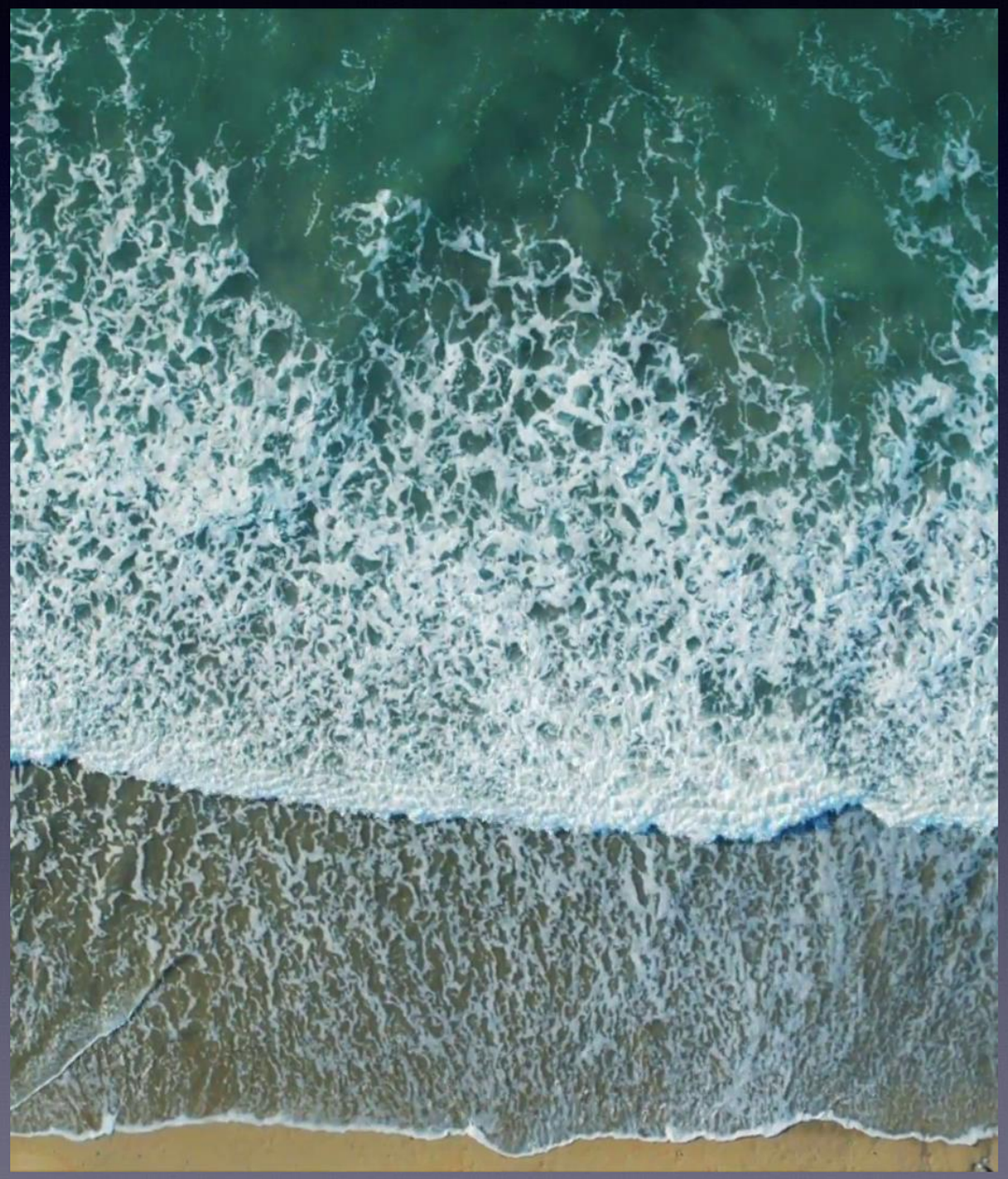
Description
The Coastal Research Laboratory (CRL) is functioning within the Institute of Applied & Computational Mathematics (IACM) of the Foundation for Research and Technology (FORTH), in Crete island (the second EU island in size and of socio-economic

140
120
100
80
60
40
20
0
Underwater Acoustics Lab

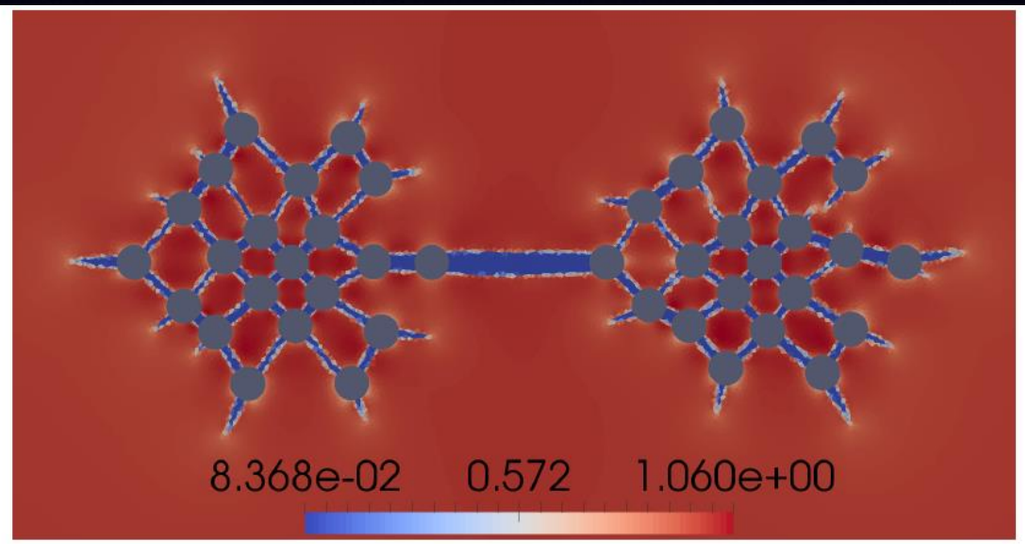
Horizontal cutting edge activities

- IACM-geo — Geosciences applications

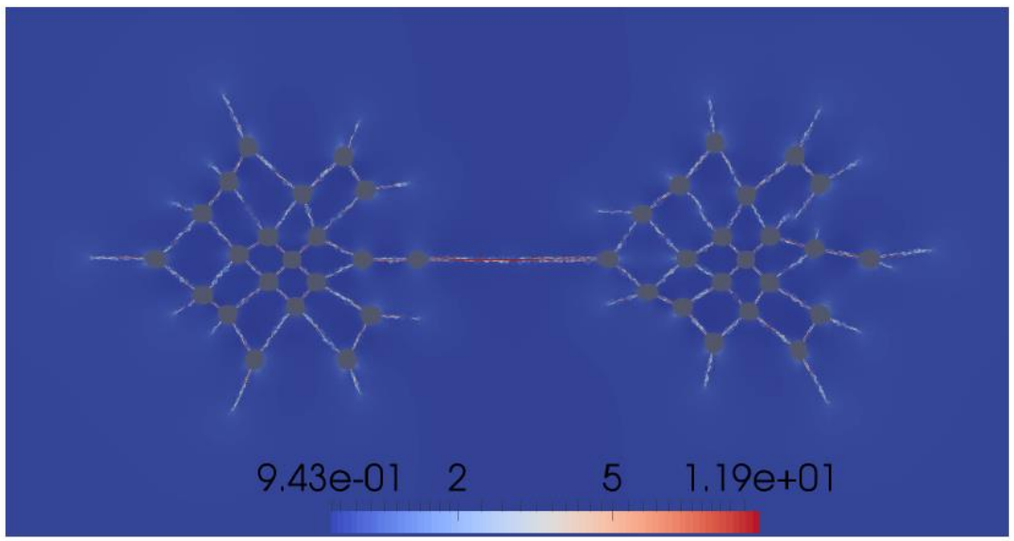


Horizontal cutting edge activities

- IACM-bio — Biomedical applications



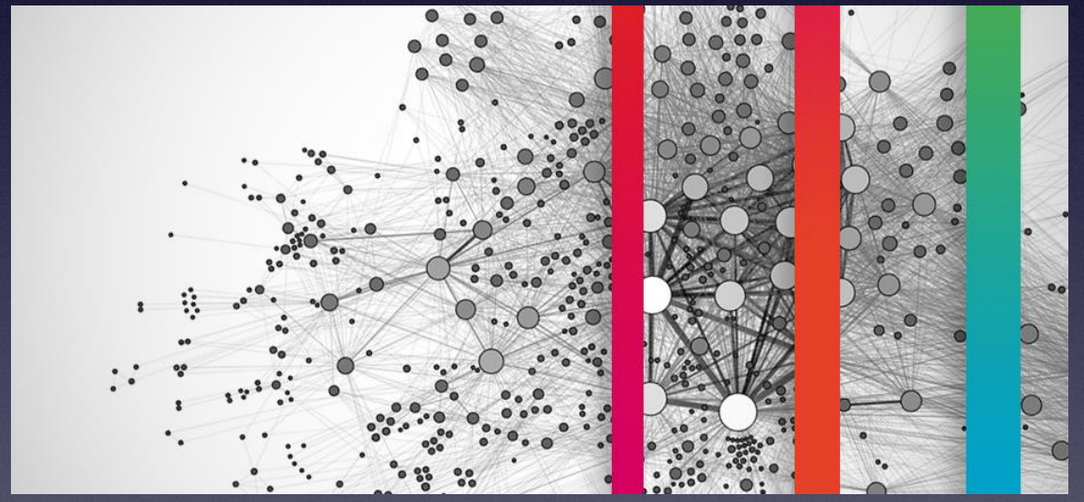
(a) $det\boldsymbol{F}$ in the reference configuration.



(b) Fibers density in the deformed configuration.

Horizontal cutting edge activities

- Data science programme



used in a-posteriori error analysis.

Then $w_1 \in H_0^1(\Omega)$, $w_1|_e = 0$ for all $e \in \Gamma_h$:

$$(\nabla \Phi, \nabla w_1) = -\sum_K \int_K (\Delta \Phi, w_1)$$

$$= \sum_K \int_K b_K |\Delta \phi|^2 \, dx .$$

Standard arguments yield:

$$(\nabla \Phi, \nabla w_1) \geq c_0 \sum_K \int_K |\Delta \phi|^2 \, dx ,$$

To conclude step 1 we shall verify (C1)

Why Mathematics?

scientific language ?
…much more !

- Unified theories
- Algorithms
- Computational Modelling

Hi-Tech relies on Hi-Tech Mathematics

- Computer Simulation based on advanced mathematical methods is increasingly becoming necessary in most fields of science and engineering —
- Serious Mathematical modelling is needed in unexplored areas —
- Applied and Computational Mathematics currently plays a central role in the advancement of Science and Technology

Advanced Mathematics contribute to

- Digital Audio/Images/Video revolution
- Prediction of physical phenomena
- Design of new materials
- Bio-medical applications
- Economics-Finance-Actuarial applications
- Data analysis

- **Modelling**
- **Analysis**
- **Computation**

Three pillars of modern applied Mathematics

Reliable predictive science

New Mathematics are necessary for

- Reliable computational science
- Advanced modelling across scales
- Statistical / data science algorithms

AMBITIONS

International Excellence

- Establish world leading research activities at chosen areas
- Essential contribution of modern mathematics in addressing important interdisciplinary challenges
- A very active and financial wealthy institute
- National reference point of research excellence in Applied Mathematics.

Goals

- Enhancement of existing activities
- New cutting edge activities
- Involvement of leading Greek researchers across Greece and abroad
- Essential links to private sector

Collaboration within FORTH

- IACM will seriously invest in promoting collaboration across the institutes at FORTH

- Service: Statistics Lab

Support of general activities related to Mathematics/Outreach

- Mathematical Conferences in Crete of the highest level
- Support essential outreach activities / Why mathematics are important?
- Coordination of collaborative activities (doctoral programs / research programs) National and European level

Ευχαριστώ πολύ!