



The Abdus Salam
International Centre for Theoretical Physics



"Scientific thought
is the common
heritage of
humankind."

Abdus Salam

ICTP OVERVIEW





- ✓ Founded in 1964 by Nobel Laureate Abdus Salam
- ✓ Sponsored by tripartite agreement between Italy, UNESCO and IAEA

ICTP mission

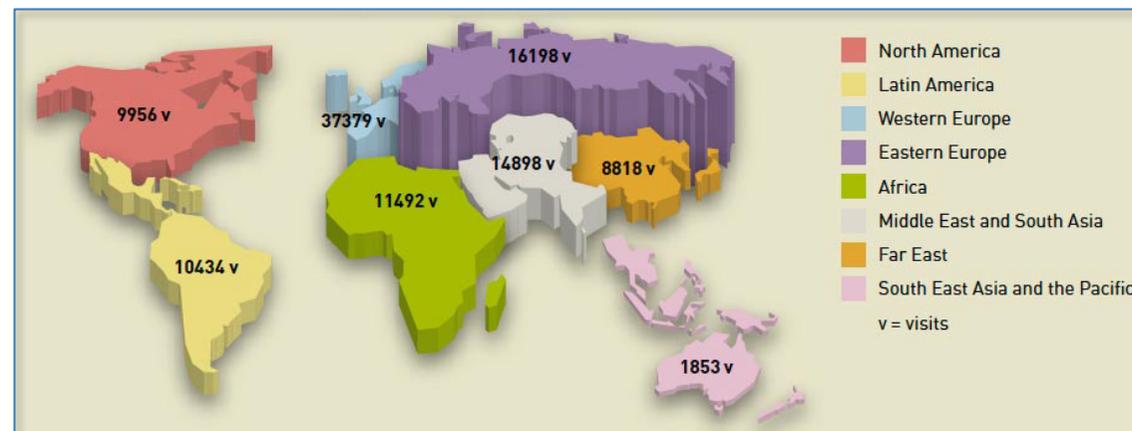
- > To foster growth of advanced physics and mathematics studies, especially in developing countries
- > To develop high-level scientific programmes and encourage international scientific exchange
- > To provide excellent research and training facilities





ICTP visiting scientists

- > More than 100,000 visits since 1970
- > About 6000 scientists each year
- > 184 countries represented
- > 20% of ICTP visiting scientists are women





Research at ICTP

- > Areas covered: Condensed Matter and Statistical Physics, Earth System Physics, High Energy, Cosmology and Astroparticle Physics, Mathematics, Applied Physics, Multidisciplinary Laboratory
- > 27 staff scientists, plus 85 post docs, staff associates, long-term visitors
- > Research support
 - > ICTP Library holdings include 64,000 books, 450 journal subscriptions and 3,500 e-journals
 - > State-of-the-art computer equipment
 - > Open access to e-journals, and digital lectures
 - > *African Physical Review*



ICTP training and education

- > Organises more than 60 conferences/ workshops each year
- > Pre-PhD programmes
 - > Diploma Programme
 - > ICTP/IAEA Sandwich Training Educational Programme
 - > Joint programmes with University of Trieste and SISSA
- > Scientific career support:
 - > Associate and Federation Schemes
 - > Training and Research in Italian Laboratories
 - > Training at Elettra Synchrotron Light Laboratory
 - > SESAME Programme



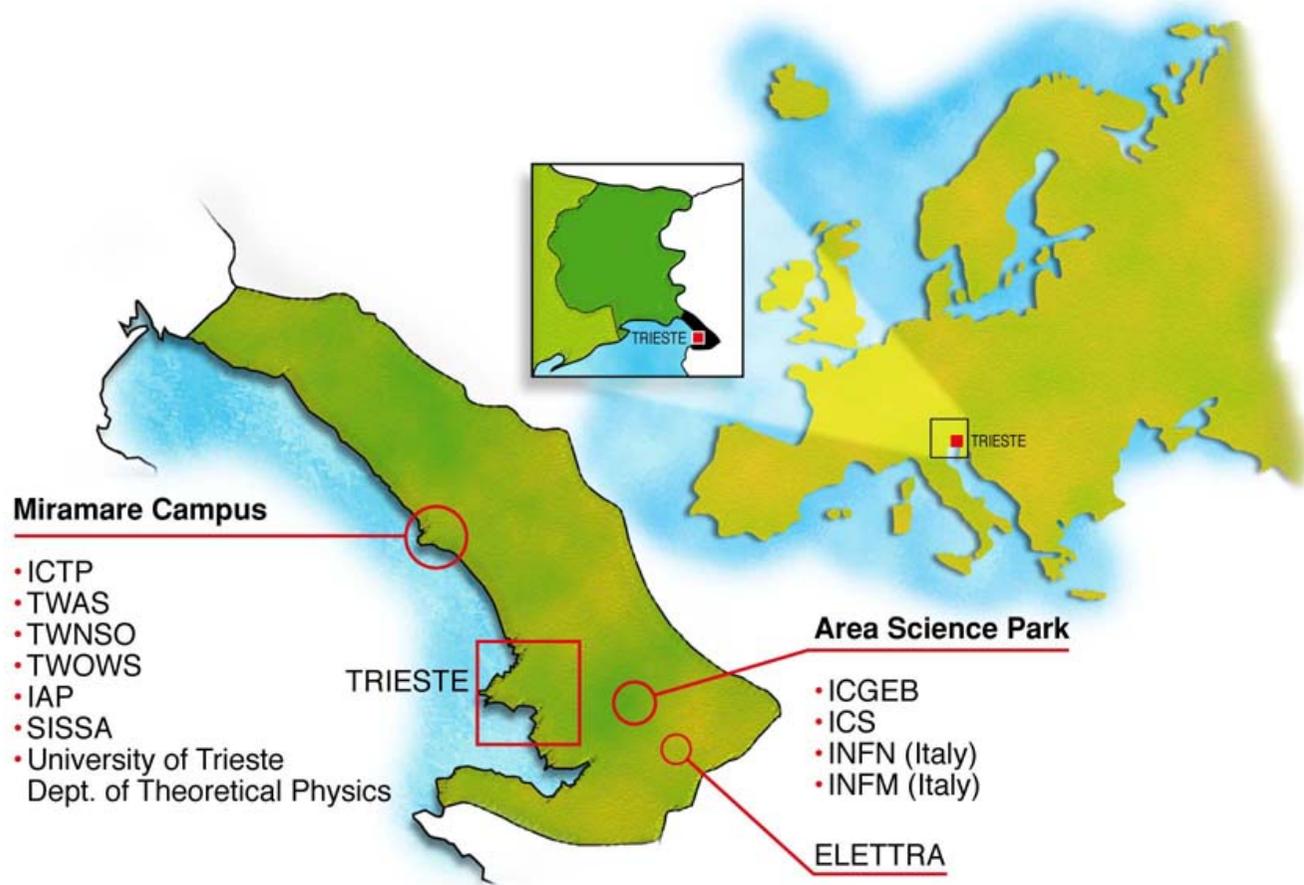
ICTP strategic plan 2010-2014

Announced during "ICTP After 45: Science and Development for a Changing World"
8-10 November 2010

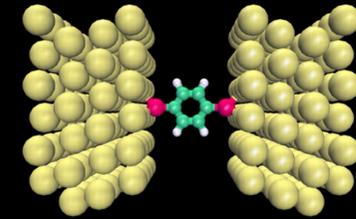


- > establish a formal PhD programme
- > establish regional centres of excellence in developing countries
- > new research directions: energy and sustainability, quantitative biology and computing sciences
- > develop improved internet-based techniques and new e-learning methods
- > create a new Institute Advancement Office that would seek new funding and support opportunities

Trieste system



Condensed Matter Physics at ICTP



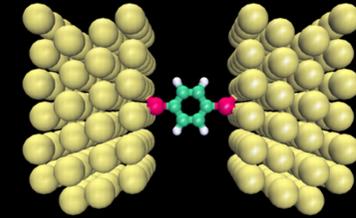
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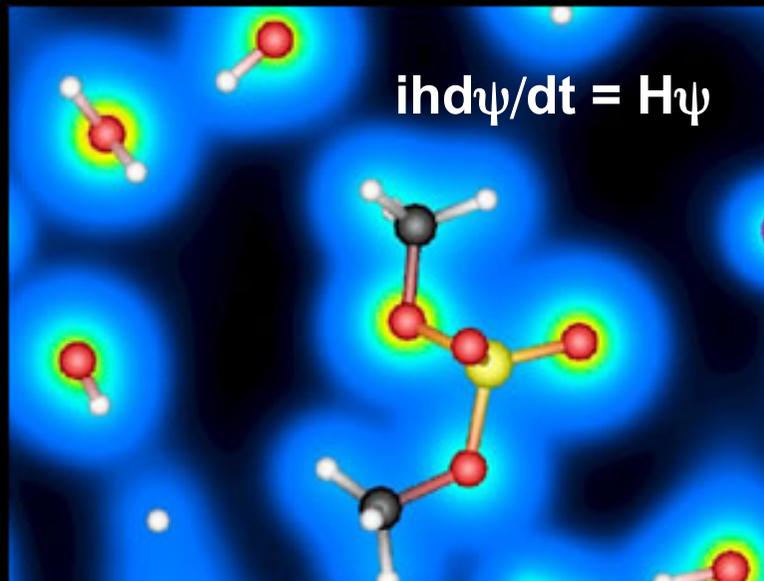
**The Condensed Matter
and Statistical Physics
Group**

**(left to right)
M. Kiselev
A. Scardicchio
M. Mueller
V. Kravtsov
S. Scandolo
R. Gebauer
N. Binggeli
M. Marsili**

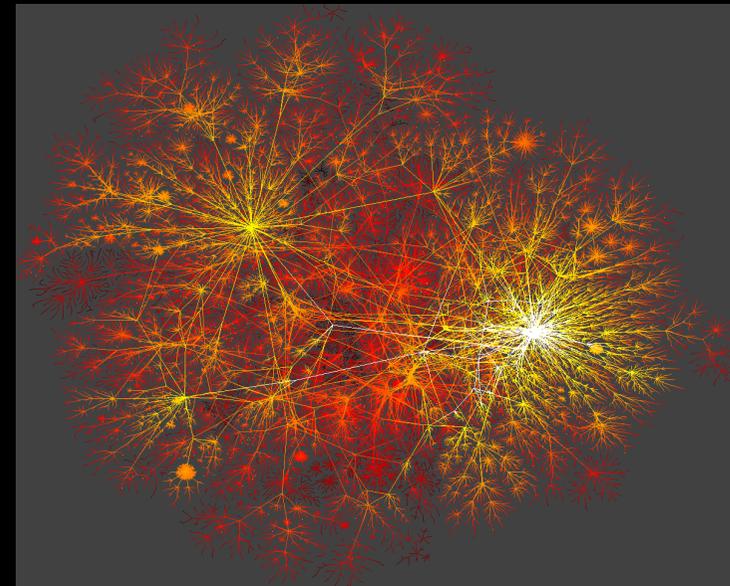
The Condensed Matter and Statistical Physics Group

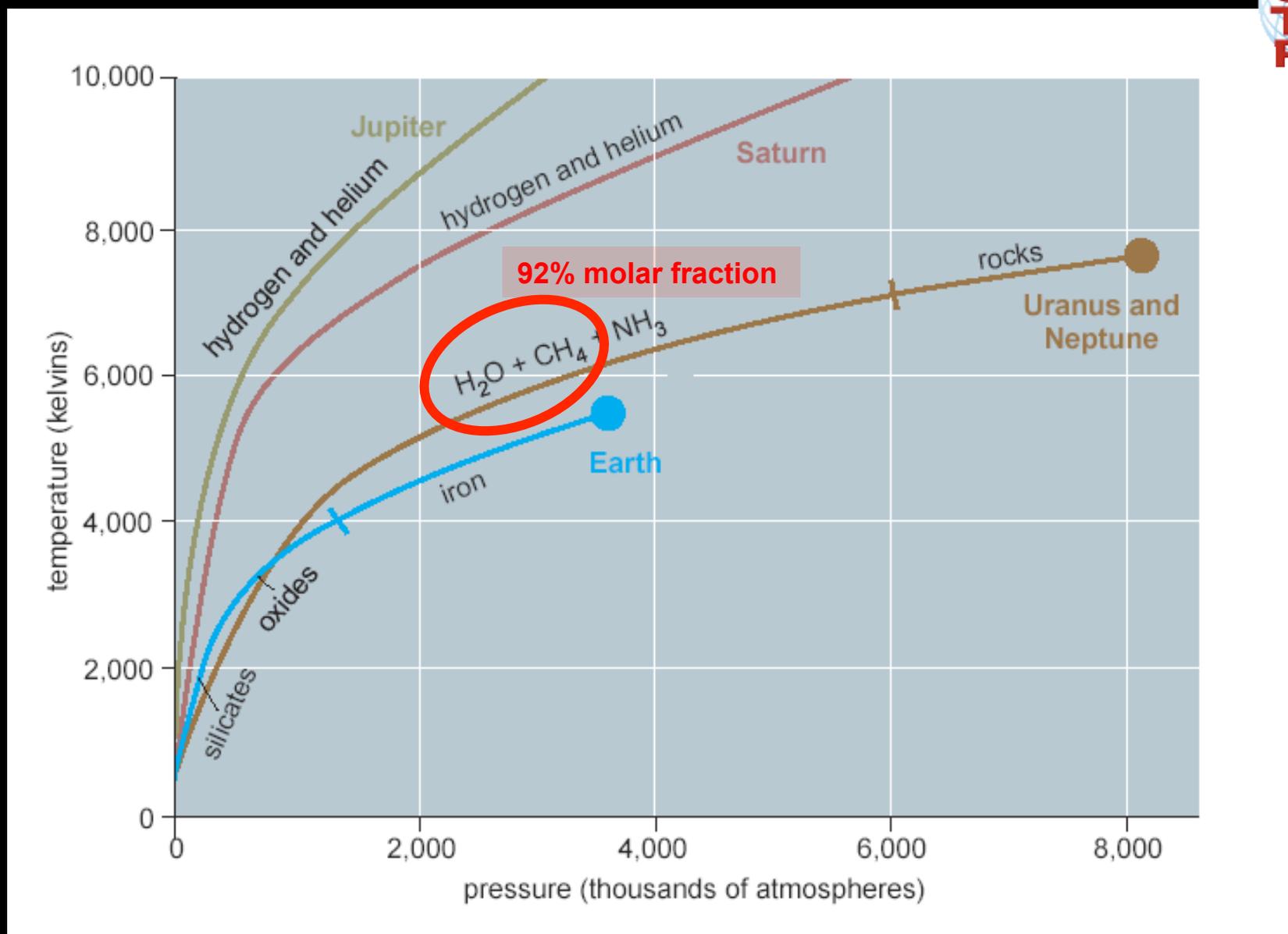


**Quantum simulations of materials:
Energy applications and Extreme
conditions**

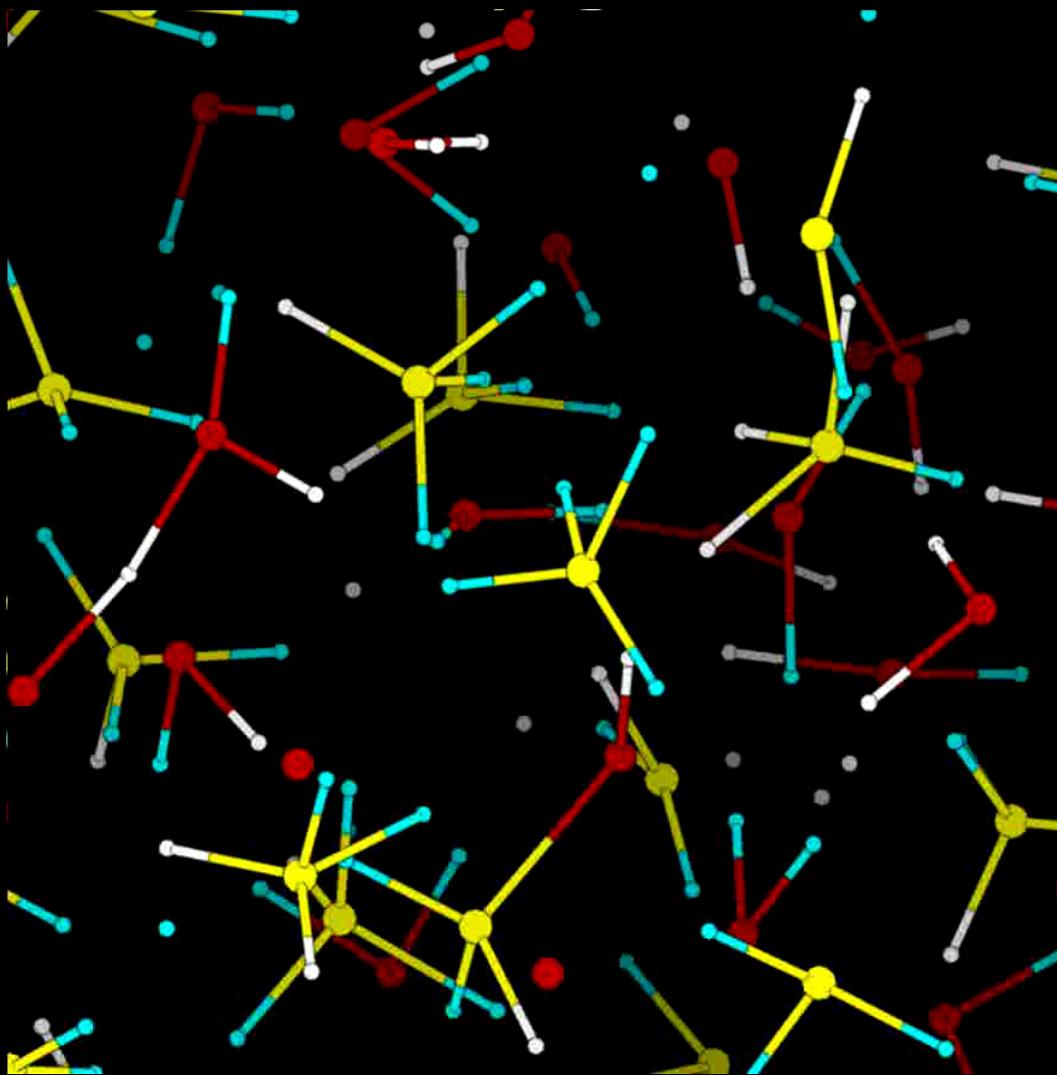


**Complex systems and networks:
Internet, financial markets, social
networks**





Methane / water mixture at 50 GPa



Fast proton diffusion by proton hopping between adjacent molecules

Methane “attacked” by ionized water

Occasional formation of C-O bonds

No formation of longer hydrocarbons (C-C bonds)

Almost metallic

M.-S. Lee and S. Scandolo,
Nature Comm., 2011

WELCOME !