



The Abdus Salam

International Centre  
for Theoretical Physics



United Nations  
Educational, Scientific and  
Cultural Organization



IAEA  
International Atomic Energy Agency

# Activities of the ICTP Telecommunications/ICT for development Laboratory

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For Development Laboratory (T/ICT4D)*

# About ICTP



- Was founded in 1964 by the late Nobel Laureate Abdus Salam.
- ICTP operates under a tripartite agreement between the Italian Government, the International Atomic Energy Agency (IAEA), and the United Nations Educational, Scientific and Cultural Organization (UNESCO).
- The agreement was ratified by an act of the Italian Parliament in January 1995.



# ICTP Mission

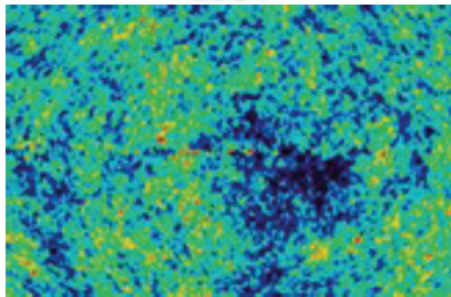


- ★ To foster growth of advanced pure and applied physics and mathematics studies, especially in developing countries.
- ★ To develop high-level scientific training programmes and encourage international scientific exchange.
- ★ To conduct research at the highest international standards.

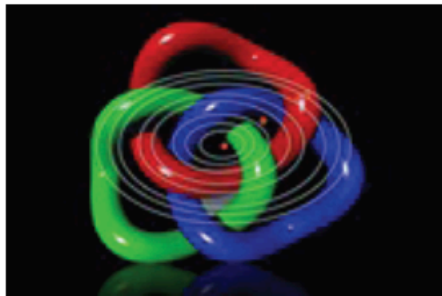
# Research at ICTP



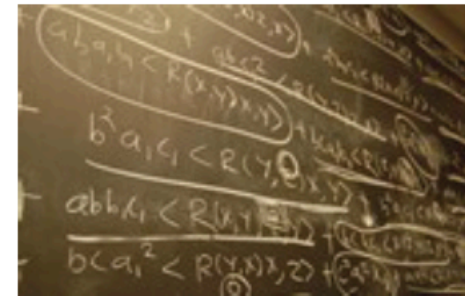
**High Energy  
Cosmology and  
Astroparticle Physics  
1964**



**Condensed Matters and  
Statistical Physics  
1974**



**Mathematics  
1986**



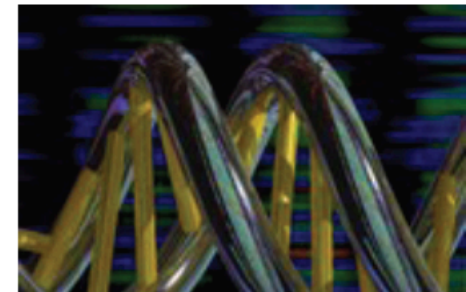
**Applied Physics  
1990**



**Earth System Physics  
1998**



**New areas  
2011**



- Telecommunications
- ICT4D
- Microprocessors...

- Renewable energies
- Quantitative Biology
- High Performance Computing



# Training activities



Schools, Workshops, conferences  
per year:

$\pm 60$  activities in campus,  
 $\pm 25$  activities in developing  
countries,

Visitors per year:

$\pm 5000$  (25% females)

Average per month  $\pm 500$

From  $\pm 140$  nations

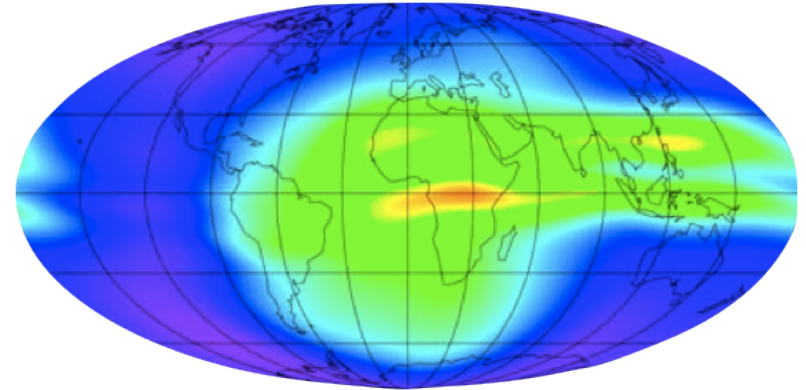


# The T/ICT4D (former ARPL)



## ✦ Ionospheric Radiopropagation (since 1990):

*research and training in ionospheric physics with application to GNSS science and technology*



## ✦ Wireless communications (since 1995):

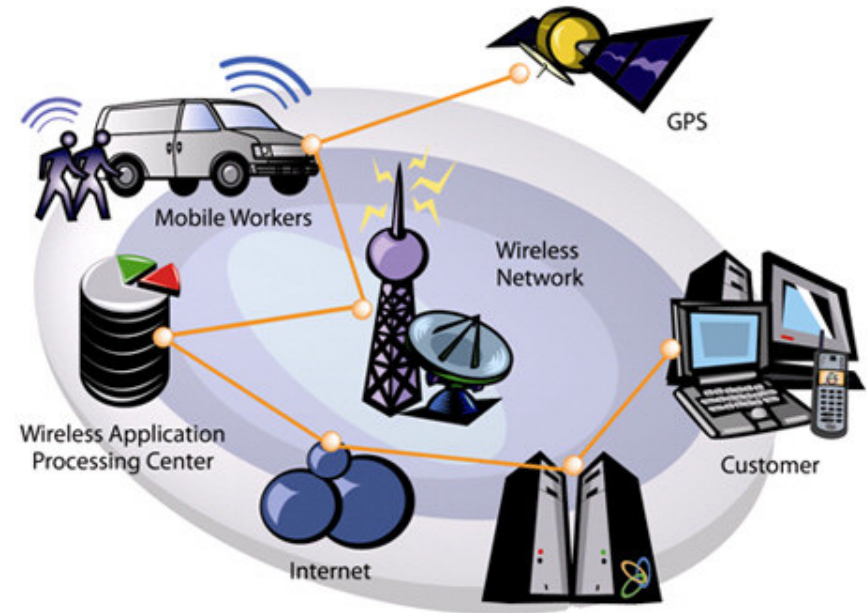
*research and training in Wireless ICT including Wireless Sensors Networks for Development and Internet of Things*



# Why this two sections together?



*Today trend*



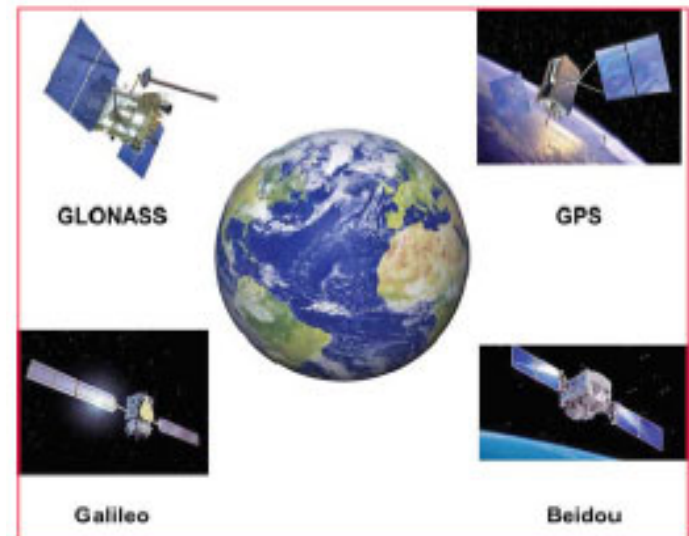
*Combined uses of GNSS (GPS, GLONASS, Galileo, Compass, etc.) and Information and Communication Technology (ICT):*

*Location Based Services*



# more...

- **Location Based Services** and timing information, using GNSS, will become increasingly important for **IoT** applications.
- The improved accuracy and overall performance created by multi-constellation **GNSS** will make these systems able to control the “things”.





# One last word

You are fortunate to have today such a number of qualified speakers with deep knowledge about IoT, I encourage you to interact with them asking questions and making comments.

***Do not hesitate!***



**THANK YOU FOR YOUR  
ATTENTION**