



COST

European **CO**operation in **Science & Technology**

Prof. Laurens Katgerman

Materials, Physics and NanoSciences (MPNS)

DC Vice-Chair



COST Mission

COST is a unique means for European researchers to jointly develop their own ideas and new initiatives across **all scientific disciplines** through **trans-European networking** of nationally funded research activities.



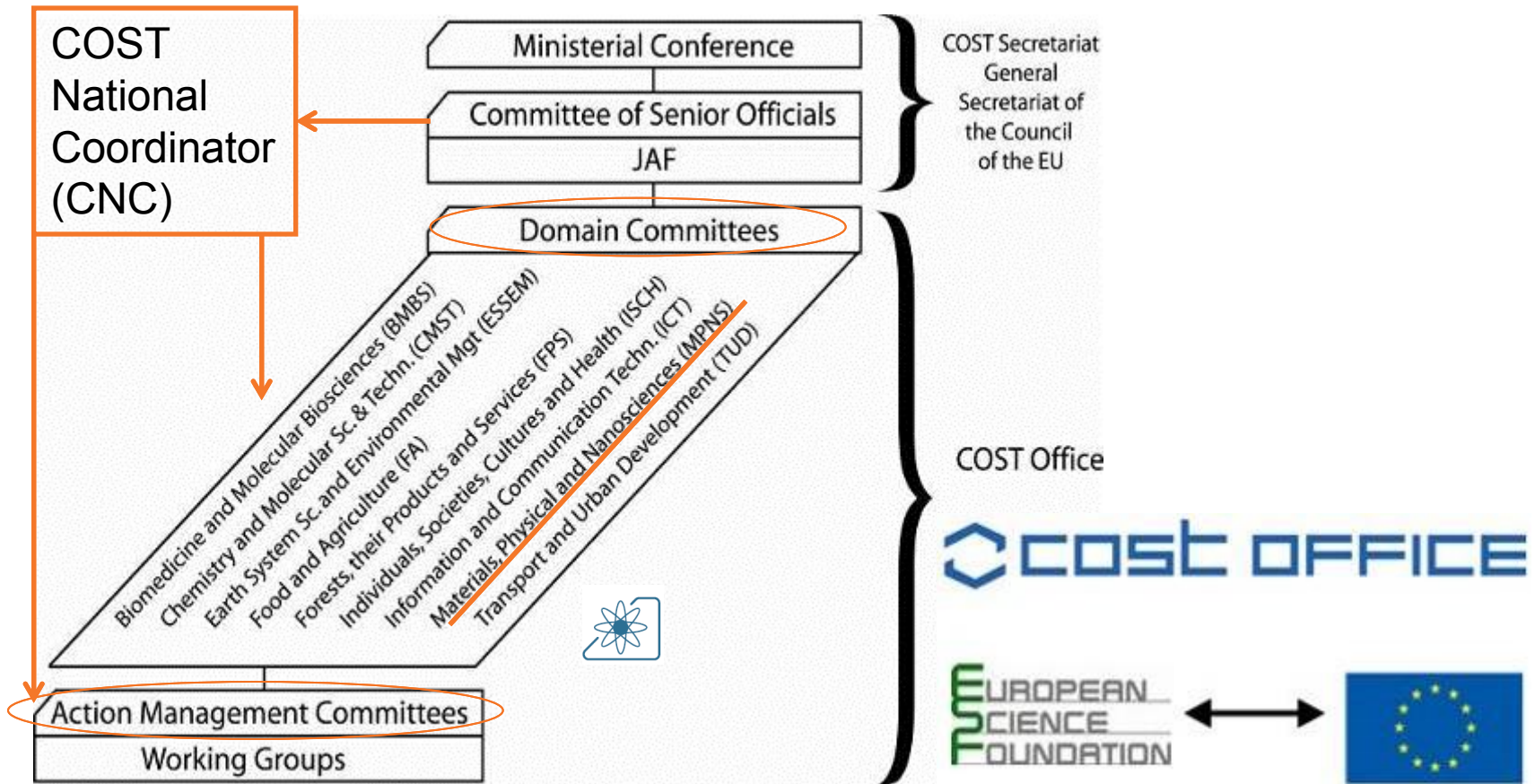
A brief history

- Oldest and widest running European **intergovernmental** network for cooperation in research in Europe
- Established by Ministerial Conference of 19 European States in **1971**, Brussels, as a Framework for coordinating nationally funded research in Europe, pre-dates
- Predates 1974 European Science Foundation; 1983 First Framework Programme; 1985 Eureka Programme
- From 19 countries in 1971 to currently **36 COST countries** with 1 cooperating state
- Open to **international organizations** and research **institutions** from **non-COST** countries
- From 7 Actions in 1971 to over **270 Actions** running today
- From 7 Domains in 1971 to **9 Domains plus a Trans-Domain**

COST Features

- Open to global cooperation
 - mutual interest
 - Enabling Early Stage Researchers
 - Pan-European - intergovernmental
 - Light-weight administration
 - Flexible implementation
- Science driven topics “Bottom-up”
 - Inclusive - à la carte participation
 - Bridging research communities – multidisciplinary
 - Coordinating national research funding
 - Public utility - pre-normative research
 - Pre-competitive - technology - industry





COST Structure



EC Contract

0.42% (210 MEUR of FP7)
or 0.49% (250 MEUR) since
June 2011

9 COST Domains

-  • Biomedicine and Molecular Biosciences (BMBS)
 -  • Chemistry and Molecular Sciences & Technologies (CMST)
 -  • Earth System Science & Environmental Management (ESSEM)
 -  • Food & Agriculture (FA)
 -  • Forests, their Products and Services (FPS)
 -  • Individuals, Society, Culture & Health (ISCH)
 -  • Information & Communication Technologies (ICT)
 -  • **Materials, Physics & Nanosciences (MPNS)**
 -  • Transport & Urban Development (TUD)
- + Trans-Disciplinary Proposals across two or more Domains can be submitted to Open Call**

COST Action =

A Science & Technology network of nationally funded projects pursuing tangible Aims and Objectives as defined in a Memorandum of Understanding (MoU)



Thorir
Assistant Professor

Ülle
Full Professor



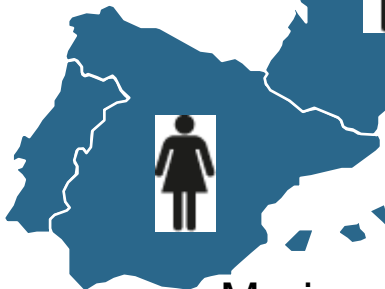
John
Consultant



Lech
Post-doc



Clémentine
Senior Researcher



Maria
phD



Zeynep
Industry
representative

How to join a COST Action?

- For details see **Action webpages** e.g. for MPNS
http://www.cost.eu/domains_actions/mpns/Actions
- COST website information on **how to participate**
http://www.cost.esf.org/participate/join_action
- To join the Management committee (MC) contact your **COST National Co-ordinator (CNC)**
[http://www.cost.esf.org/about_cost/who/\(type\)/3](http://www.cost.esf.org/about_cost/who/(type)/3)
- To join a Working Group (WG) contact the **Action Chair**



COST Action activities

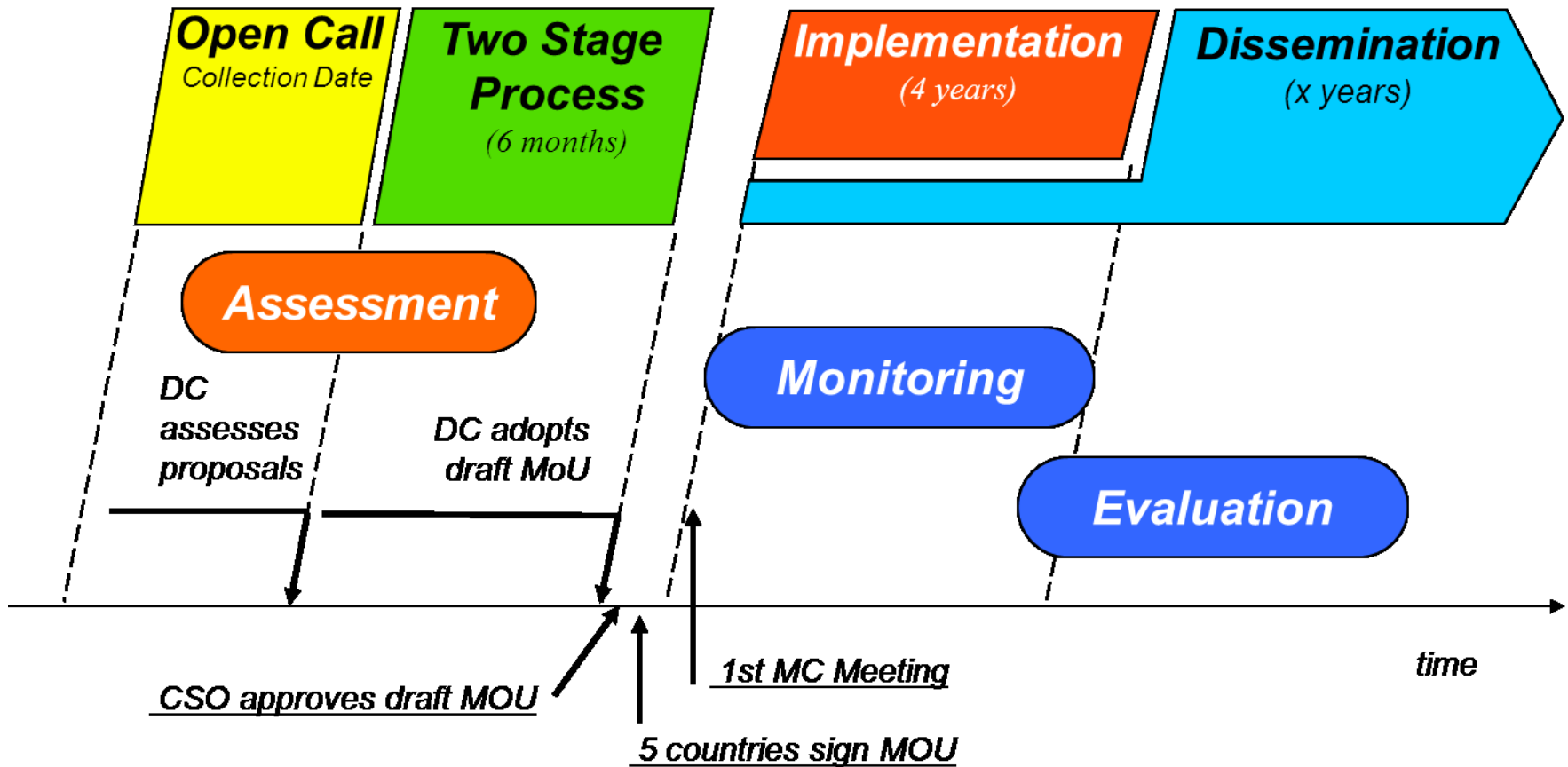
- Science management meetings
- Working Group meetings
- Conferences, workshops & seminars
- Training schools
- Scientific Exchange Visits (STSMs)
- Dissemination + publications

COST – Statistics 2010

- 269 COST Actions
- > 1000 scientific workshops and meetings > 30 000 participants
- 1250 STSMs ~ 3 weeks
- > 90 Training Schools > 1200 participants
- > 100 book publications



COST Action Life Cycle



Pre-proposal → Full proposal → Hearings



.

MPNS Domain



Domain description

http://www.cost.eu/domains_actions/mpns

The Domain is home to **material science**, extending from **conception through to production** including characterization, examination, evaluation, fabrication and development, to actual application and service, as well as related databases, codes, standards and inspections.

Also incorporates **nanomaterials** and **nanosciences** and the **nanotechnological applications** thereof.

It also supports exploratory **basic and applied** research in **physics, theoretical and experimental**, as a key to understanding the laws governing the behaviour of matter and energy.

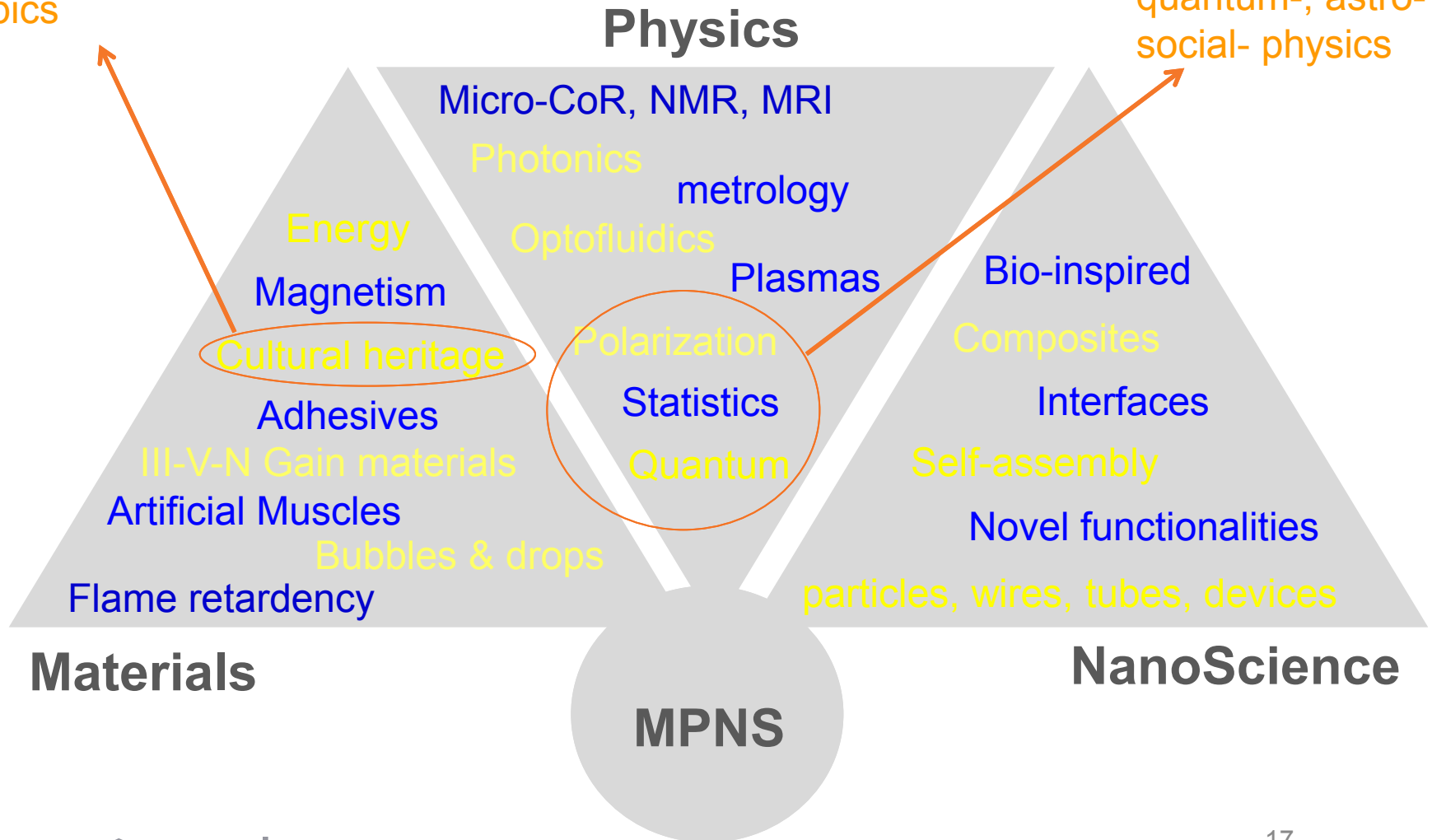
Domain history & composition

- 1971 Domain “Materials”; 1997 Domain “Physics” ; 2006 Domain MPNS = Materials, Physical & Nanosciences became Materials, Physics & Nanosciences; 2010 Materials, Physics & Nanosciences
- 32 DC delegates & DC Chair Anthony Flambard (DE, 2010), Vice-Chair Laurens Katgerman (NL, 2011), BA, LU, MK, SE not currently represented
- March 2013 - 36 running MPNS Actions (includes 6 TD)

Domain portfolio

Historically supportive to CH topics

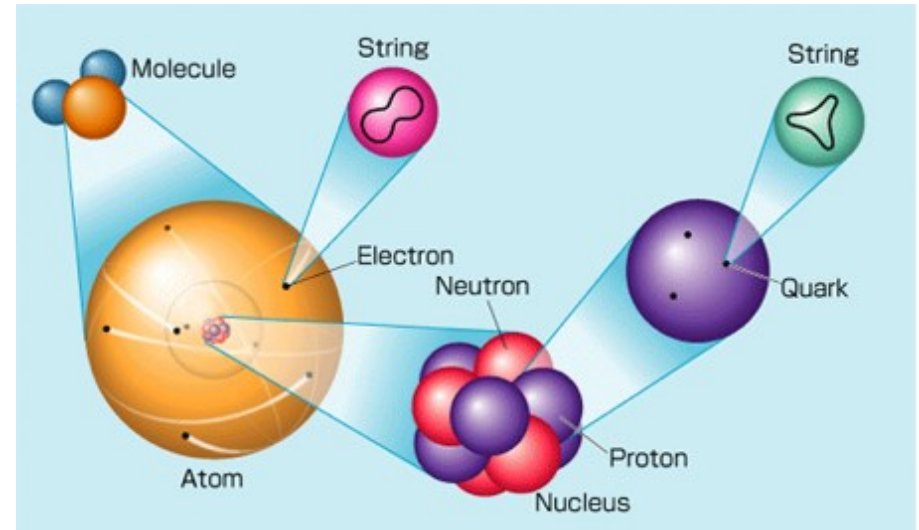
Recently welcoming entirely new communities in cold matter-, quantum-, astro- & social- physics



MP1210 The String Theory Universe

Objective

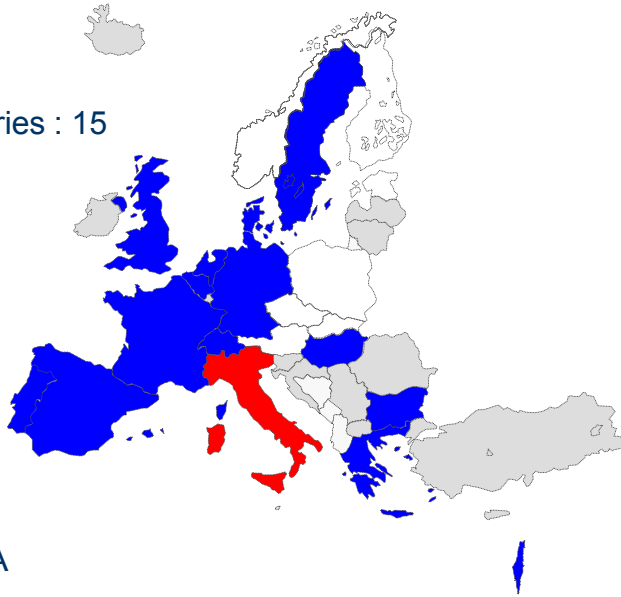
Fundamental, forefront research exploring the role played by String Theory in Particle Physics, Cosmology and Condensed Matter Physics.



Interested Countries : 15

Proposer : **IT**

BE, BG, CH, DE,
DK, EL, ES, FR,
HU, IL, NL, PT,
SE, UK



NON-COST : ZA

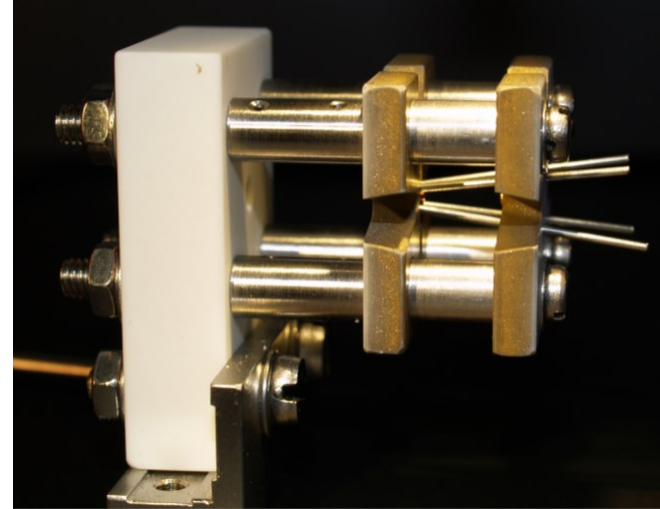
WG1 Equilibration & thermalisation,
emergence of canonical states
WG2 Thermodynamic and information
theoretic relations for general quantum
systems
WG3 Implementations: from classical to
quantum thermodynamic experiments

Silvia Penati <Silvia.Penati@mib.infn.it>

MP1209 Thermodynamics in the quantum regime (QuT-COST)

Objective

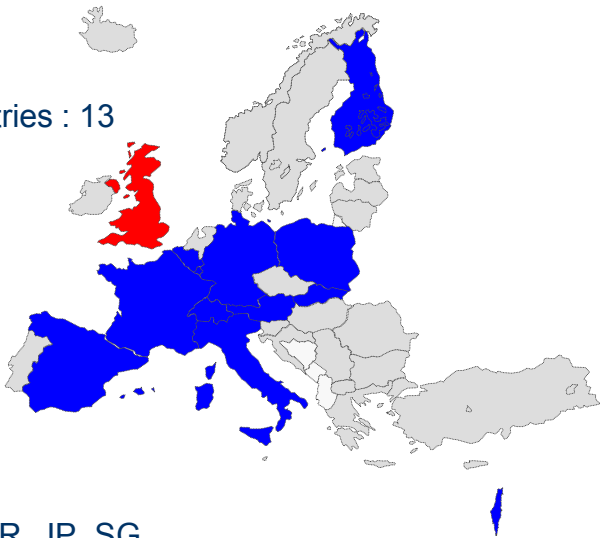
To address fundamental questions in quantum thermodynamics and develop the scientific basis that underpins future thermodynamic technologies in the quantum regime.



Interested Countries : 13

Proposer : UK

AT, BE, CH, DE,
ES, FI, FR, IL,
IT, LU, PL, SK



NON-COST : AR, JP, SG

WG1 Equilibration & thermalisation,
emergence of canonical states
WG2 Thermodynamic and information
theoretic relations for general quantum
systems
WG3 Implementations: from classical to
quantum thermodynamic experiments

Anders, Janet <j.anders@ucl.ac.uk>

MP1104 Polarization as a tool to study the Solar System and beyond

Objective

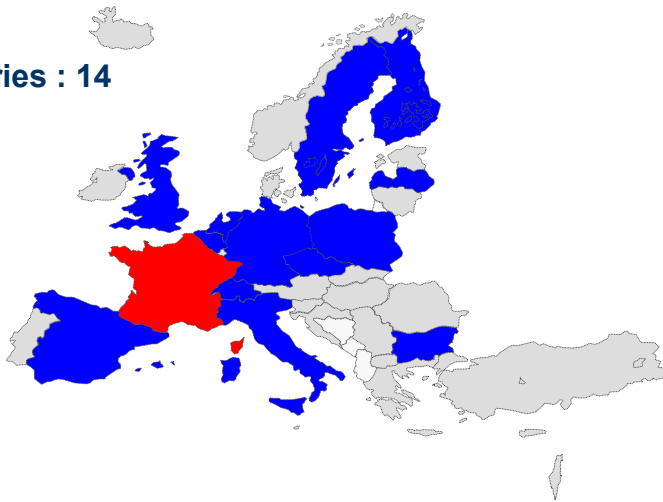
to promote polarimetry to advance knowledge about astrophysical objects within the Solar System and beyond



Interested Countries : 14

Proposer : FR

BE, BG, CH, CZ,
DE, ES, FI, FR, IT,
LV, NL, PL, SE,
UK



WG1	Theory and modeling
WG2	Observations
WG3	Instrumentation
WG4	Experimentation

Non-COST participation: ZA, AR, UA, US



EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY

Hervé Lamy <herve.lamy@aeronomie.be>

MP1006 Fundamental Problems in Quantum Physics (FPQP)

Objectives

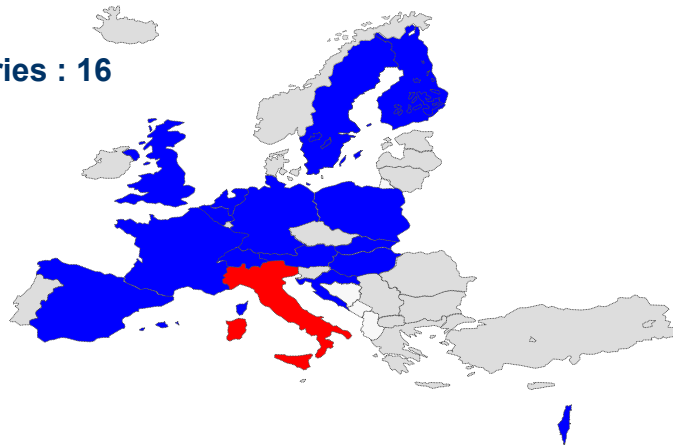
to clarify quantum mechanics and its meaning, the quantum-to-classical transition, the connection with relativity, and to test its limits of validity.



Interested Countries : 16

Proposer : **IT**

AT, BE, CH, DE,
ES, FI, FR, HR,
HU, IL, NL, PL,
SE, SK, UK



Angelo Bassi <angelo.bassi@gmail.com>

- | | |
|-----|---|
| WG1 | Quantum theory without observers |
| WG2 | Effective descriptions of complex systems |
| WG3 | Quantum theory meets relativity |
| WG4 | From theory to experiments |

MP0905 Black Holes (BH) in a Violent Universe



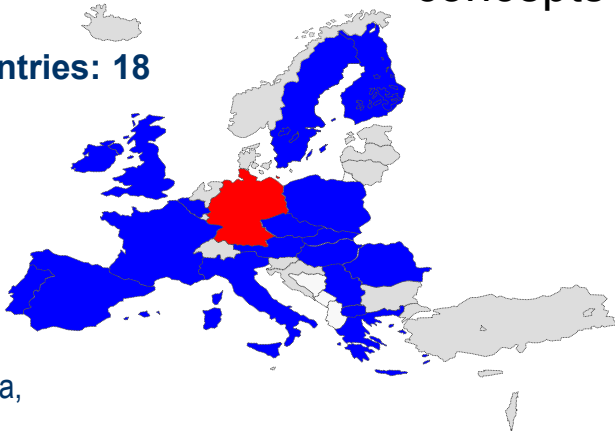
Objectives

- To enhance the understanding of the BH-phenomenon and its impact on the evolution of our Universe
- To study the fundamental laws of nature using a multi-disciplinary and multi-dimensional approach of BH research
- To use BHs as laboratories to test new physical concepts

Interested Countries: 18

Proposer: **DE**

AT, BE, CZ,
ES, FI, FR,
GR, HU, IE, IT,
PL, PT, RO,
RS, SI, SE, UK



Non-COST: Australia,
Georgia, Lebanon,
Russia, South Africa

WG1	Quantum Black Holes
WG2	Stellar Black Holes & Pulsars
WG3	The Galactic Centre
WG4	Supermassive Black Holes

Silke Britzen <sbritzen@mpifr-bonn.mpg.de>



Materials in a resource-constrained world

14-16 May 2013, Delft, The Netherlands

This MPNS-ICT-ESSEM transdisciplinary Science & Technology Strategic Event about 'Materials in a resource constrained world' targets break-through scientific developments leading to new concepts and products by bringing together scientists from different disciplines to find the way forward for a holistic approach which is needed to solve the problem of materials scarcity in the near future.

The event aims to bring together policy-makers and scientists across different scientific disciplines to: 1) analyze the magnitude of the problem of the increasing demands on the planets' raw materials and natural resources, 2) explore potential solution strategies: the Sustainable exploration, extraction, processing, recycling and substitution of critical raw materials, 3) discuss the way forward.

Key words: Resource-Efficiency, 'non energy, non-agricultural raw materials', 'sustainable exploration, extraction, processing, recycling and substitution'

(4)

Proposers:

A. FLAMBARD (MPNS DC Chair)
S. LOUCA (ICT DC Chair)
D. SCHINZER (CMST DC Chair)

Workshop Chair & Vice-Chair

S. Erik OFFERMAN

Laurens KATGERMAN

Delft University of Technology

Steering Committee

M. MENTE (ESSEM)

H. SCHMIEDEL (ICT)

D. BOL (M2i)

C. WHELAN (COST)

Domain Contacts



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Mr. Kent Hung
Senior
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Officer
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Thank you for your attention !

www.cost.eu

Domain pages: e.g.

www.cost.eu/mpns

Open Call:

www.cost.eu/opencall

Guidelines:

www.cost.eu/guidelines

FAQ:

www.cost.eu/service/faq

Reciprocal Agreements:

www.cost.eu/about_cost/reciprocal_agreements

Library:

www.cost.eu/library

Events:

www.cost.eu/events

About COST

www.cost.eu

ACRONYMS (1/2)

AO	Administrative Officer
APC	Annual Progress Conference
BMBS	Biomedicine and Molecular Biosciences (Domain)
CGA	COST Grant Agreement
CGS	COST Grant System
CG	Core Group
CMST	Chemistry and Molecular Sciences and Technologies (Domain)
CNC	COST National Coordinator
CSO	Committee of Senior Officials
DC	Domain Committee
DCCCCM	Domain Committee Chairs Cluster Consensus Meeting
EEP	External Experts Panel
ESF	European Science Foundation
ESR	Early Stage Researcher
ESSEM	Earth System Science and Environmental Management (Domain)
FA	Food and Agriculture (Domain)
FPS	Forests, their Products and Services (Domain)
GH	Grant Holder
HOSO	Head Of Science Operations

ACRONYMS (2/2)

ICT	Information and Communication Technologies (Domain)
IE	Interdisciplinary Exploratoria
ISCH	Individuals, Societies, Cultures and Health (Domain)
JAF	Judiciaire, Administratif, Financière, Working party of Legal, Administrative and Financial Affairs within COST(CSO Executive Group)
JSO	Junior Science Officer
MC	Management Committee
MoU	Memorandum of Understanding
MPNS	Materials, Physical and Nanosciences (Domain)
SAO	Senior Administration Officer
SO	Science Officer
SSO	Senior Science Officer
STSM	Short-Term Scientific Mission
TD	Trans-Domain
TDP	Trans-Domain Proposal
TDP-SAB	Trans-Domain Proposal Standing Assessment Body
ToR	Terms of Reference
TUD	Transport and Urban Development (Domain)
WG	Working Group