



## COST ACTION THOR

THEORY OF HOT MATTER AND RELATIVISTIC HEAVY-ION COLLISIONS

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











# Preliminary Program

COST/THOR - WG meeting/CG meeting 19+20. Jan, 2017

time	Wednesday 18.1.2017	Thursday 19.1.2017	Friday 20.1.2017	Saturday 21.1.2017	
	Arrival	Working Group Meeting	Working Group Meeting Core Group Meeting	Departure	
9 <sup>00</sup> - 10 <sup>00</sup>		Get together/Tour de table/Introduction (M. Bleicher, B. Tomasik, J. Kunicka)	Strategy planning for GP 2		
10 <sup>00</sup> - 10 <sup>30</sup>		Presentation WG 1 - Leader (G.Aarts) Topics and Goals (15+15 min)	Presentation WG 3 - Leader (tbd) Topics and Goals (15+15 min)		
10 <sup>30</sup> - 12 <sup>00</sup>		Presentation WG 1 - Speaker 1 (20+10min) - Speaker 2 (20+10min) - Discussion/Milestones	Presentation WG 3 - Speaker 1 (20+10min) - Speaker 2 (20+10min) - Discussion/Milestones		
12 <sup>00</sup> - 13 <sup>30</sup>		Lunch	Lunch		
13 <sup>30</sup> - 14 <sup>00</sup>		Presentation WG 2 - Leader (J.Aichelin) Topics and Goals (15+15 min)	Core Group meeting - STSM Committee decisions		
14 <sup>00</sup> - 15 <sup>30</sup>		Presentation WG 2 - Speaker 1 (20+10min) - Speaker 2 (20+10min) - Discussion/Milestones	Definition of Milestones for GP 2 Discussion of planned schools and events		
15 <sup>30</sup> - 17 <sup>00</sup>		Discussion	Discussion		

# Current Status of the Action

- 22 countries on board, of them 8 ITCs
- Countries in the process of joining:  
Lithuania?,  
Romania,  
Serbia?,  
Bosnia?,  
Cyprus,  
Bulgaria (has joined),  
Denmark
- Initial NNCs on board, JINR in the process

 Austria [AT]
 Croatia [HR]
 Czech Republic [CZ]
 Finland [FI]
 France [FR]
 Germany [DE]
 Greece [EL]
 Hungary [HU]
 Ireland [IE]
 Israel [IL]
 Italy [IT]
 Netherlands [NL]
 Norway [NO]
 Poland [PL]
 Portugal [PT]
 Slovakia [SK]
 Spain [ES]
 Sweden [SE]
 Switzerland [CH]
 Turkey [TR]
 United Kingdom [UK]

# OBJECTIVES & DELIVERABLES

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# Main Challenge

- We want to theoretically understand the properties of matter at the frontiers of temperature and density as it is created in violent collisions of protons and nuclei
- We achieve this by developing novel theoretical approaches and advanced numerical methods in two directions: ab-initio calculations and phenomenological approaches

# Secondary Objectives: Research Coordination

1. **Development of simulation tools:** Common development of the next generation of simulation tools for the modeling of heavy ion collisions and the interpretation of the experimental data.
2. **Development of ab-initio approaches:** Joint development of new theoretical concepts for the description of QCD matter in equilibrium and in vacuum.
3. **Extraction of physical properties of QCD:** Common development of specific signatures for the experimental measurement of specific properties of ultra hot and super dense QCD matter.
4. **Understanding collectivity:** Development of a common understanding of the thermalization and dynamics of small colliding systems (proton-proton, and proton-nucleus collisions).

# Secondary Objectives: Research Coordination

5. **Synergy building:** Merging knowledge of loosely connected European groups in the field working on complementary topics.
6. **Wiki page** preparation with current knowledge description.

# Secondary Objectives:

## Capacity Building

1. Providing a knowledge platform for the different communities to **create a Europe wide community**.
2. To **support and strengthen atomized groups from the Inclusiveness Target Countries (ITC)** by supporting their collaboration with international partners.
3. To **improve the visibility of groups** and public awareness about science **in ITC** in general by placing events there.
4. To **foster scientific collaboration** with and between the **Near Neighbor Countries (NNC)**.
5. To **promote the integration of Early Career Investigators (ECI)** into managing and decision-making processes.
6. To **promote female scientists** as role models for the young generation by giving them positions in management, as lecturers at schools, and by making them visible in outreach.



# Main Deliverables

- Intermediate deliverables:
  - Training Schools and Workshops
  - Progress reports and recommendations
  - Publications in peer reviewed journals
- Final deliverables:

White papers presenting the current status of the field and identifying the needs for the next-generation research methodologies and how these needs can be addressed in practice on regional, national and European level

# Budget Plan GP2 – May/17 – April/18

- [Zimanyi Winter School on Heavy Ion Physics](#) Dec. 4-8, 2017 Budapest, Hungary, Proposer: Mate Csanad (no budget estimate, expect 30k€)
- [MC and mutual COST Working group meeting](#) August 17-19, 2017 Chania, Crete, Greece, Proposer: Larissa Bravina, Theo Gaitanos, Budget: 45.500€
- [30th Indian-summer School of Physics](#) Sept. 2018 Prague, Czech Republic, Proposer: Jan Cepila, Budget estimate: 13k€ local cost (+ travels)
- + STSM
- Total budget available for GP2: approx 105k€

# WORKING GROUPS

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# Working Group 1

## Phases of strongly interacting matter

- Objectives:
  - Improvement of the theoretical knowledge of the phase diagram of strongly interacting matter, particularly the position of the critical point.
  - Improvement of the theoretical determination of the Equation of State of strongly interacting matter.
  - Closer collaboration with scientists active in WG2 and WG3.
  - Training young researchers in physics subjects related to WG1.
  - Dissemination of subject-specific knowledge beyond the framework of the Action.

# Working Group 2

## Dynamics of strongly interacting matter

- Objectives:
  - Improvement of the theoretical knowledge of the phenomenological description of the evolution of hot matter created in an ultrarelativistic nuclear collision.
  - Improvement of the determination of the Equation of State and transport coefficients of strongly interacting matter from comparisons of the results of simulations with data.
  - Unified description of hard probes in the environment provided by strongly interacting bulk matter.
  - Closer collaboration with scientists active in WG1 and WG3.
  - Training young researchers in physics subjects related to WG2.
  - Dissemination of subject-specific knowledge beyond the framework of the Action.

# Working Group 3

## Initial state and hard probes

- Objectives:
  - Improved description of the initial state of the nucleus incoming into an ultrarelativistic collision.
  - Improvement in the theoretical determination of parton energy loss in hot matter.
  - Unified description of hard probes in the environment provided by strongly interacting bulk matter.
  - Closer collaboration with scientists active in WG2 and WG3.
  - Training young researchers in physics subjects related to WG3.
  - Dissemination of subject-specific knowledge beyond the framework of the Action.

# MANAGEMENT ROLES

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# Core Group

- Action Chair: Marcus Bleicher (Germany)
- Vice Chair: Boris Tomasik (Slovakia)
- STSM Coordinator: Gergely Barnafoldi (Hungary)
- WG1 Leader: Gert Aarts (UK)
- WG2 Leader: Jörg Aichelin (France)
- WG3 Leader: Nestor Armesto (Spain)
- Equal opportunity coordinator: Larissa Bravina (Norway)
- Outreach coordinator: Ivan Melo (Slovakia)
- Web manager: Jan Cepila (Czech Republic)
- Wiki-page manager: Marlene Nahrgang (France)



# GOALS OF THIS MEETING

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# Why we meet

- Presentations at the kick-off WG-meetings made available online on the web-page for all Action participants and also for a wider audience. They will address most urgent issues in theory of hot strongly interacting matter.
- Recommendations from the 1st WGx meeting, particularly specifying most urgent problems in the area.