

# RBI-T-WINNING – Ruđer Bošković Institute: Twinning for a step forward of the Theoretical Physics Division



GA No: 692194

Start Date of Project: 01 February 2016

Duration: 36 months

WP1	Updating knowledge
Task 1.2	Attending educative events
Deliverable 1.2	First report on activities of Task 1.2
Due month	12

## **Description:**

The general objective of the WP1, as stated in the accepted proposal, is to efficiently increase knowledge in RBI in order to pursue new research topics. For the sake of reaching this objective, two tasks have been identified within the work package 1: Task 1.1 Events organized in Croatia aimed specifically on the education we want to get and Task 1.2 Attending educative events.

The main aim of the Task 1.2 is to expose RBI researchers to broader picture of subjects and to enable them to meet broader community of experts in given subjects. There are several activities organized (or in preparation) to achieve this:

Subtask 1.2.1 Organizing lectures at RBI

Subtask 1.2.2 Attending lectures at twin institutions

Subtask 1.2.3 Statistical theoretical physics school at UCPH (NBI)

Subtask 1.2.4 QCD school in France.

As for the ST 1.2.1, in the first 12 months a lot of progress has been made. An internal procedure concerning the organization of the lectures has been developed, a draft poster announcement which is used for advertising the events has been created, a mailing list has been set up. Communication and dissemination goals were achieved through e-mail messages sent to the whole consortium and collaborators outside the consortium, as well as through the project website. Since the start of the project, and apart from the lectures that were given during the second day of the kick-off meeting, we had a pleasure of hosting three experts from the twinned institutions who delivered three lecture series:

- Koen van den Dungen (SISSA), Particle Physics from Almost-Commutative Spacetimes: The (Noncommutative) Standard Model and its Phenomenology, 30 June 2016;
- Oscar Cata (LMU), Introduction to Effective Field Theories, 15 - 17 June 2016;
- Paolo Salucci (SISSA), Dark Matter in Galaxies: A review, 12 - 13 May 2016;
- Koen van den Dungen (SISSA), Particle Physics from Almost-Commutative Spacetimes: Almost-Commutative Spacetimes; The Lagrangians, 10 - 11 May 2016.

The lectures were well-attended by Division of Theoretical Physics (DTP) and non-DTP scientists and students. A new set of lectures has been arranged for February and March.



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In relation to ST 1.2.2, some of the DTP members have shown interest and first contacts have been established. Based on that communication, it is expected that one Post-Doc (member of the Particle Physics and Cosmology Group) will attend a series of lectures at SISSA at the beginning of Year 2 of the project. We will also encourage others, and especially DTP PhD students, to attend classes in twinned institutions.

ST 1.2.3 Statistical theoretical physics school at UCPH (NBI) originally planned for Year 1 and Year 2 of the project, has been postponed to Spring 2018 (Year 3 of the project). The main reason for the delay in this activity was the fact that the colleagues from the Niels Bohr Institute, who are the lead organizers of these schools, confronted an unpleasant and unforeseeable situation of losing national sources that they had for several consecutive years and that represented the largest portion of the school budget (Twinning funds were meant to make a small contribution and were simply not enough to cover expenses of the school organisation). Therefore, Year 1 school had to be cancelled due to a shortage of funds. Recently NBI node got the opportunity to organize a big school in the spring of 2018 in Les Houches, France, with outstanding lecturers. The researchers from NBI opted to do this school instead of usual smaller schools organized at NBI. Given that this event was supposed to take place at NBI, but is now bigger and better (replaces two events at NBI) the partners agreed and decided to perform ST1.2.3 in this form of one bigger event in Year 3. Since most activities in the project are independent we do not expect this deviation to affect execution of other tasks. The consortium is of opinion that this change should lead to a better quality of the final output and expectedly deliver a significantly greater impact. (\*This change to the original project workplan occurred with the agreement of the Project Officer; approval emails received on 3 August 2016 and 30 January 2017.)

QCD School of ST 1.2.4, entitled Dense systems in QCD at asymptotical energies, was successfully held from 20 June to 01 July 2016, hosted by Laboratoire de Physique Théorique, in Orsay. Both the researchers from LPT (Samuel Wallon) and RBI nodes (Kornelija Pasek-Kumerički) were in the school organizing committee. The school was a continuation of the two first schools of this series that took place in 2012 (QCD prospects for future ep and eA colliders) and 2014 (Correlations between partons in nucleons). This year's school programme consisted of sessions that covered four major topics: Formal developments in small- $x_B$  physics:  $k_T$ -factorization, saturation, color-glass condensate, Formal developments in heavy ions physics, Phenomenological aspects, Reconciling high-energy resummations with collinear factorization. Each session included lectures (all were delivered on the blackboard), discussion and session for seminars (given by PhD students or Post-Docs attending the school). The event attracted more than 47 participants from 19 countries and representatives from partner institutions.

Public URL on the QCD School website: <https://indico.in2p3.fr/event/12948/>.



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