

# 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

WP 1	Updating knowledge
Task 1.2	Attending educative events
Deliverable 1.5	Third report on activities of Task 1.2
Due month	36

## **Description:**

**Task 1.2** The main task is to expose RBI researchers to broader picture of subjects and to enable them to meet broader community of experts in the given subjects.

### **Subtask 1.2.1** Organizing lectures and seminars at RBI

In the final year of the project one lecture, three seminars and one colloquium were organized:

Lectures:

**Sébastien Descotes-Genon (LPT)**, *Determining the CKM matrix*, June 8th and June 11th 2018.

Seminars:

**Felix Rudolph (ASC - LMU)**: *The Doubled Geometry of String Theory*, 11 April 2018.

**Dmitri Bykov (LMU Munich)**: *Complex structures and zero-curvature equations for sigma-models*, 25 April 2018

**Damir Bečirević (LPT Orsay)**: *Lepton Flavor Universality Violation: Window to physics beyond the Standard Model*, 12 June 2018.

Colloquium:

**D. Lüst (LMU & MPI for Physics Munich)**: *Quantum Aspects of Black Holes*, 22 November 2018.

### **Subtask 1.2.2**

Attending lectures at twin institutions:

In the reporting period there was a number of visits and lecture attendance in particularly to SISSA

Jan. 22nd 2019: Prof. Guido Pupillo (Strasbourg)

Title: Algebraic localization of disordered long-range quantum models

- May 8th 2018: Prof. F. van Wijland (U. Paris Diderot),

Title: Dynamical phase transitions

- Mar. 13th 2018: Prof. Federico Ricci-Tersenghi

Title: On the complex behavior of disordered models in a field

- Feb. 27th 2018: Prof. Viktor Eisler

Title: Entanglement in the XXZ chain with a gradient



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- Feb. 28th 2018: Prof. Giuseppe Mussardo (SISSA)  
Title: The Riemann Conjecture
- Feb. 20th 2018: Immanuel Bloch (LMU Munich)  
Title: Using Ultracold Quantum Gases to Probe New and Old Frontiers of Statistical Physics.

### Subtask 1.2.3

The school under name *Evolution of Diversity -- The Les Houches Physics School*, was organized from 25 February - 02 March 2018 in Les Houches, France. The school was organized by Twinning node Niels Bohr Institute, Copenhagen, Denmark; ESPCI, Paris, France and KTH University, Stockholm, Sweden.

People involved in the organization were: K.Sneppen and N. Mitarai

NBI has a leading role in organizing this school. Originally, we proposed the school to be held in NBI in Copenhagen in year 1 and 2, but the opportunity to organize a much larger school in Les Houches in year 3 was too good to be missed. Historically Les Houches is considered to be the best school of Theoretical Physics in the world, and just its name is enough to attract the best lecturers from the whole world.

[https://en.wikipedia.org/wiki/École\\_de\\_physique\\_des\\_Houches](https://en.wikipedia.org/wiki/École_de_physique_des_Houches).

During the 5 days of school (25 Feb 2018, 2 Mar 2018) extensive topics of biophysics and systems biology were covered. There were 32 esteemed invited speakers from all over the world. Participants were exposed to cutting edge research in this field and were able to present their own work through poster session.

The school was attended by 2 interested RBI scientist and we expect a great benefit for our group by learning the state-of-the-art theory in evolution of diversity – a topic that DTP found of great mutual interest with NBI. The list of lecturers consisted of the world most renowned experts from Europe, America and Asia.

In total the school had 32 lectures (and poster sessions), and 68 participants (36 students).

The webpage of the school is:

<https://indico.nbi.ku.dk/event/999/>

### Subtask 1.2.4

The school under the name of *Fourth International Summer School of QCD "QCD meets precision"* was additionally included in the project after the approval by REA Project Officer.

The school was organized from June 18-22 2018 at LPT Orsay, France.

Organizers from RBI-T-WINNING project were:

S. Wallon (LPT Orsay), K. Passek-Kumerički and G. Duplančić (RBI)



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The previous “Third International Summer School of QCD” was successfully organized in June 2016 and it was supported by Twinning (Subtask 1.2.4). The QCD schools at LPT Orsay are organized every two years. As before, the leading scientists were invited to present a series of lectures from which both the young scientists as well as the experienced researchers benefit. Other researchers had the opportunity to present their work in shorter seminars.

This iteration of the school’s series focused on QCD at the precision frontier. The description of any short-distance dominated observable relies on factorization theorems, allowing for an expansion of these observables in powers of both the strong coupling (perturbative expansion) and the hard scale (twist expansion).

A precise understanding of these expansions is a prerequisite in order to make relevant theoretical studies of the most advanced experiments both in hadronic physics and in particle physics. The school has addressed several of these aspects through four main lecture series, covering both the theoretical developments and the phenomenological applications. Following a now well-established tradition of these school’s series, all lectures were delivered on the blackboard, for pedagogical reasons. Also dedicated sessions for seminars were organized, in order that participants could have the opportunity to present their work.

The school was attended by 39 participants (from 5 countries), and out of these 25 students (2 from DTP – Domagoj Leljak, Goran Popara).

The webpage of the school is:

<https://indico.in2p3.fr/event/17453/>



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