

**Doctoral School of Physics
University of Trieste
Scientific Council Meeting**

Minutes of the Scientific Council Meeting –December 4 and 5 2012.

The Scientific Council of the Doctoral School of Physics, met in Trieste on 4 and 5 December 2012 to discuss the following agenda:

AGENDA

1. Seminars of the 3rd year PhD students.
2. Brief Report of the Director on the School activity and progress
3. Discussion and evaluation of the School status and perspectives.
4. A.O.B.

Present: prof. Alvio Renzini (INAF, Padova), prof. Alberto Rotondi (Univ. of Pavia), prof. Paolo Camerini (Univ. of Trieste), prof. Gaetano Senatore (Univ. of Trieste),

Excused: Prof. J.C. Maan (Radboud University Nijmegen), Prof. Franco Strocchi (INFN - Sez. Pisa)

Chair: prof. Paolo Camerini

1. Seminars of the 3rd year PhD students.

On 4 and 5 December 2012 the PhD students who applied for being admitted to the final exam reported on their research work according to the following schedule.

4 December 2012, Room 3B-Build.H2bis

14:30 MONTANINO DAMIANA

Study of the associated production of a Z boson and jets in pp collisions at $\sqrt{s} = 7$ TeV at CMS

15:15 LEA RAMONA

Study of hypernuclei production in Pb-Pb collisions at $\sqrt{s_{NN}} = 2.76$ TeV with the ALICE experiment at the LHC.

16:30 LOPEZ FRANCES CAROLINE

Single photon counting system for mammography with synchrotron radiation

17:15 MOHAMMADI SARA

Bio-medical X-ray imaging with Synchrotron Radiation: study and implementation of algorithms related to phase sensitive techniques

5 December 2012, Room V- Build. A

9:00 DORIGO MIRCO

Search for New Physics in the $B_0_s \rightarrow J/\psi \phi$ and $B_0_s \rightarrow \phi \phi$ Decays at CDF

9:45 VATTAKUNNEL SHAJI

The cosmic star formation rate: Observational measures and modelization

10:45 OLIVIERI GIORGIA

Organic Electronic Devices: Investigation of the Electronic Transport Properties at the Molecular Level

11:30 CAPOGROSSO VALENTINA

Dimensionality and ordering effects on the electronic structure of low dimensional strongly correlated electron transition metal oxides

12:15 NOVELLI FABIO

In search of selective excitations for studying out-of-equilibrium properties in strongly correlated electron systems and high temperature superconductors

The students were questioned by the Scientific Council members with the aim of understanding their independence and scientific maturity. The comments and judgment of the SC are reported later (see point 3)).

2. Brief Report of the Director on the School activity and progress

The School Director illustrates the numbers characterizing the School and the 2012 relevant events as summarized below

- Total number of students (as in December 2012).

A total of 34 students (11 for each active cycle plus one prorogated) presently belong to the School.

- Teachers board.

The Teachers board is presently composed of 21 members.

- 2012 relevant events.
- The seven students of the XXIV cycle who were admitted to the final exams were awarded a PhD degree (march-april 2012)

- May 2012: Publication of UniTS Evaluation Committee analysis.

Score: A+/ excellent

- XXV cycle: candidates admitted to the final exam (3 NuclSubn. physics, 3 condensed matter physics, 1 astrophysics, 2 medical physics); deadline extended for 3 students for scientific reasons
- Two External referees assigned to each student; Final exam to be held in march-april 2013
- XXVI cycle : 11 students successfully completed assigned activities
- XXVII cycle : 11 students successfully completed the assigned activities
- New PhD cycle (XXVIII:2013-2016) was funded and selections started. 11 fellowships are available: 5 UniTS, 2 Elettra, 2 INFN (exp.&theor. Nuclear. Subn. Physics), 1 INAF(astrophysics) +1 ESF (European social fund) Selections (October 2012) were passed by 18 candidates; 9 fellowships are presently being assigned. Approximately 50% of the candidates from other universities.
- NON-UE candidates Selection: 1 candidate passed the selection
- ESF selection: fellowship assigned to a medical physics project
- Summer 2012 :New bilingual web site
- Summer 2012: New members elected in teachers board (now 21)

3. Discussion and evaluation of the School status and perspectives.

The analysis of the School status and perspectives was based on the discussion of a series of documents provided by the School Director. The documents examined are the following:

- list of PhD students and their project title
- Table analyzing the post-graduation occupation
- Internal UniTS evaluation committee report
- year-end report (year 2012, XXVII cycle students)
- year-end report (year 2012, XXVI cycle students)
- year-end report (year 2012, XXV cycle students)
- Thesis summary of XXV cycle students
- referees report about XXIV cycle students thesis
- list of referees chosen for the XXV cycle students

The first aspect analyzed by the Scientific Council is the quality and variety of the scientific activity of the doctoral students. The Council finds that the research activities of the doctoral students are well balanced between the different areas of research of the School:

Solid state physics (9 students); theoretical physics (3 students); Astrophysics (9 students); Nuclear and subnuclear physics (10 students); Medical Physics (9 students).

A more accurate look was given to the topics covered by the students' researches, according to the list provided by the Director, together with the Year-End-Reports, which provided a more detailed insight of the different activities.

ASTROPHYSICS

- Studio della fisica dei neutrini tramite l'analisi della struttura su grande scala dell'Universo
- Studio del mezzo intergalattico con spettroscopia ad alta risoluzione di quasars.
- Connection between supernovae and γ -ray bursts
- Dinamica ed evoluzione delle galassie in ammassi: analisi e confronto di dati ottenuti da simulazioni ed osservazioni
- Analisi e Caratterizzazione di Effetti Sistemati per lo Studio delle Anisotropie del Fondo Cosmico a Microonde con lo Strumento Planck LFI
- "Galaxies through the cosmic ages: the role of primordial conditions and environmental effects"
- Survey fotometrica di nane M per la ricerca di pianeti extrasolari rocciosi ed abitabili
- The cosmic star formation rate: Observational measures and modelization

Medical & bio- physics, environmental physics

- ANALYSIS OF RADON PRONE AREAS IN FRIULI VENEZIA GIULIA AND CONTAMINATION IMPACT ON POPULATION
- Single photon counting system for mammography with synchrotron radiation
- Sources of DNA damage: comparison between radiation-induced damage and endogenous damage

Solid State Physics

- Rivelazione risolta in tempo e per immagini della struttura elettronica di molecole e clusters
- Studio di modelli fisico-matematici per la valutazione del rischio finanziario

- PROPRIETA' FISICHE E FUNZIONALIZZAZIONE DI MATERIALI A BASSA DIMENSIONALITA'
- Struttura elettronica di isolanti topologici Spettroscopia acustica ad ampio spettro in sistemi disordinati
- Studio della materia in condizioni termodinamiche estreme attraverso esperimenti di tipo pump&probe
- Organic Electronic Devices: Investigation of the Electronic Transport Properties at the Molecular Level Dimensionality and ordering effects on the electronic structure of low dimensional strongly correlated electron transition metal oxides.
- In search of selective excitations for studying out-of-equilibrium properties in strongly correlated electron systems and high temperature superconductors
- Bio-medical X-ray imaging with Synchrotron Radiation: study and implementation of algorithms related to phase sensitive techniques

THEORETICAL PHYSICS

- Modelli di collasso spontaneo della funzione d'onda: analisi matematica e fenomenologica
- Fluttuazioni ed entanglement in sistemi quantistici mesoscopici
- Entanglement for identical Bosons

The opinion of the Council is that the research topics cover a wide range of subjects which are at the frontier of contemporary physics research, with a variety which witnesses a rich and lively scientific environment.

In order to better evaluate the quality of the research, besides the Year-end-Reports several other aspects and indicators were considered.

- **Year-End-Seminars:** the impression of the Council is positive, with several good and some excellent seminars. The students were in general able to give a good description of their work as well as of its motivations. A general improvement was noted with respect to the previous year seminars, with a greater attention to the communication of their work to a wider audience. The only exception were the seminars by the students educated abroad: as stressed by prof. Rotondi the average preparation appeared somewhat lower with respect to that of their fellow students probably denoting an initial gap not yet fully filled.
- **Referees judgment:** the reports of the referees on the thesis of the Students of the XXIV cycle that graduated in Spring 2012 were thoroughly analyzed.

They vary from positive to very positive, highlighting also some cases of excellence. This is considered by the S.C. one of the most relevant indicators of the quality of the students work.

- **Final exam Committee** judgment on Graduated students: they are all positive.
- **Scientific Publications:** the students of the last year are either writing or have already published the results of their work on peer reviewed international journals. This witnesses the high level of the student research and more in general of the research groups they enter when they start their PhD.
- **Post graduation occupation:** the monitoring activity on the post graduation occupation of the former PhD students for 5 years after graduation continued, showing very high levels of occupation as well as employments where the PhD title is relevant.
- **Scientific production.** The SC briefly discusses the scientific production of the Teachers Board and of the supervisors, finding it copious and published on high quality peer reviewed journals.

In consideration of the above observations the S.C. deems the Doctoral School of Physics is continuing with success its efforts to maintain a high quality profile. It also highlights areas where it is possible to improve, recommending to put further efforts in improving the selection of non European students.

5. A.O.B.

Nothing to report.

The meeting ends at 4.30 p.m.