European Centre for Theoretical Studies in Nuclear Physics and Related Areas

ECT* Wolfram Weise and Technische Universität München

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- Scientific Board News
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Annual Report
2014

European Centre for Theoretical Studies in Nuclear Physics and Related Areas
Trento
Number of ECT* Visitors per Country 2014

- Germany: 159 visitors
- Italy: 157 visitors
- USA: 105 visitors
- United Kingdom: 73 visitors
- Japan: 63 visitors
- Poland: 30 visitors
- Spain: 33 visitors

Countries with fewer than 10 visitors:
- Austria, Belgium, Canada, China, Croatia, Cyprus, Czech Republic, Denmark, Finland, France, Greece, Hungary, India, Ireland, Israel, Italy, Korea South, Mexico, Netherlands, Norway, Portugal, Romania, Russia, Slovakia, South Africa, Spain, Sweden, Switzerland, Turkey, UK, and USA.
Scientific Board of ECT*

- Last Board meeting: January 10
- Next Board meeting: June 19

→ Call for workshop proposals 2016

- Baha Balantekin’s term as Board member and Chair ended
- New Board Chair: Piet Mulders (VU Amsterdam)

- Present Board members:
  - Angela Bracco (NuPECC & U Milano)
  - Francois Gélis (CEA Saclay)
  - Paul-Henri Heenen (U Libre de Bruxelles)
  - Maria Paolo Lombardo (INFN - LN Frascati)
  - Judith McGovern (U Manchester)
  - Piet Mulders (VU Amsterdam)
  - Johanna Stachel (U Heidelberg)
  - Ubirajara Van Kolck (CNRS - IPN Orsay)

- New Board member:
  - Sanjay Reddy (INT and UW, Seattle)
  → (Approval by NuPECC)
<table>
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<tr>
<th>Date</th>
<th>Event</th>
<th>Organisers</th>
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<tr>
<td>12 - 23 January</td>
<td>International Winter School and Workshop on Strongly Correlated Fluids of Light and Matter</td>
<td>Organisers: I. Carusotto (INO-CNR BEC Center), C. Ciuti (Université Paris-Diderot), A. Imamoglu (ETH Zurich), R. Fazio (SNS Pisa)</td>
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<tr>
<td>26 - 30 January</td>
<td>Observations &amp; Theory in the Dynamics of Neutron Stars</td>
<td>Organisers: N. Chamel (Université Libre de Bruxelles), A. Rios Huguet (University of Surrey), J. Holt (University of Washington, Seattle), G. Shen (TU Darmstadt)</td>
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<tr>
<td>16-20 March</td>
<td>Heavy Quark Physics in Heavy-Ion Collisions: Experiments, Phenomenology and Theory</td>
<td>Organisers: V. Greco (University of Catania &amp; INFN-LNS), M. Lombardo (INFN-LNS), A. Mischke (University of Utrecht), N. Xu (Lawrence Berkeley Laboratory)</td>
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<tr>
<td>13 April - 22 May</td>
<td>Doctoral Training Programme: Computational Nuclear Physics - Hadrons, Nuclei, Dense Matter</td>
<td>Organiser: M. Lombardo (INFN-LNS)</td>
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<td>8 - 12 June</td>
<td>New Directions in Nuclear Deep Inelastic Scattering</td>
<td>Organisers: S. Scopetta (University &amp; INFN, Perugia), R. Dupré (IPN Orsay)</td>
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<td>22 - 25 June</td>
<td>Cold Atoms Meet High Energy Physics</td>
<td>Organisers: S. Stringari (University of Trento), M. Inguscio (LENS, Florence &amp; INRIM, Torino), G. Martinelli (SISSA, Trieste)</td>
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<td>6 - 10 July</td>
<td>Lattice Nuclei: Nuclear Physics and QCD - Bridging the Gap</td>
<td>Organisers: F. Pederiva (University of Trento), M. Savage (University of Washington, Seattle), J. Kirscher (Hebrew University of Jerusalem)</td>
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<td>20 July - 07 August</td>
<td>Training in Advanced Low Energy Nuclear Theory: Nuclear TALENT Course on Few-Body Methods and Nuclear Reactions</td>
<td>Organisers: G. Orlandini (University of Trento), A. Kievsky (INFN &amp; University of Pisa), M. Hjorth-Jensen (Michigan State University &amp; University of Oslo)</td>
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<tr>
<td>22 - 24 July</td>
<td>HASPECT Collaboration Meeting</td>
<td>Organisers: M. Battaglieri (INFN-Genova)</td>
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<td>24 - 28 August</td>
<td>The Interplay Between Atomic and Nuclear Physics to Study Exotic Nuclei</td>
<td>Organisers: M. Godfreyd (Université Libre de Bruxelles), S. Fritzsch (Helmholtz-Institut Jena), G. Neyens (University of Leuven), W. Nörtershäuser (TU Darmstadt)</td>
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<td>07 - 11 September</td>
<td>LFC15: Physics Prospects for Linear and other Future Colliders after the Discovery of the Higgs</td>
<td>Organisers: G. Pancheri (INFN Frascati), S. De Curtis (INFN Firenze), F. Kapusta (LPNHE – IN2P3), S. Moretti (Southampton University), F. Richard (LAL, IN2P3)</td>
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<tr>
<td>14 - 18 September</td>
<td>ECT*-APCT Joint Workshop: From Rare Isotopes to Neutron Stars</td>
<td>Organisers: C. Lee (Pusan National University, Busan), F. Gulminelli (LPC &amp; University of Caen), Y. Oh (Kyungpook National University, Daegu), J. Schaffner-Bielich (Goethe University Frankfurt)</td>
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<td>21 - 25 September</td>
<td>Excited-State Quantum Phase Transitions</td>
<td>Organisers: P. Cegnar (University of Prague), T. Brandes (TU Berlin)</td>
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<td>05 - 09 October</td>
<td>Advances in Diagrammatic Monte Carlo Methods for Quantum Field Theory in Nuclear-, Particle-, and Condensed Matter Physics</td>
<td>Organisers: S. Chandrasekharan (Duke University), C. Gattringer (University of Graz), R. Kaul (University of Kentucky), D. Lee (North Carolina State University)</td>
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<td>12 - 16 October</td>
<td>Nucleon Resonances: From Photoproduction to High Photon Virtualities</td>
<td>Organisers: R. Gothe (University of South Carolina), VI. Mokeev (Jefferson Lab), E. Santopinto (INFN Genora)</td>
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<tr>
<td>19 - 23 October</td>
<td>Frontiers in Hadron and Nuclear Physics with Strangeness and Charm</td>
<td>Organisers: C. Curceanu (INFN-INFN Frascati), K.T. Brinkmann (University of Giessen), J. Marton (SFB-Vienna), U.G. Kirch (University of Bonn &amp; FU Halle), B.S. Zou (ITP/CAS, Beijing)</td>
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<tr>
<td>26 - 30 October</td>
<td>From 1D Fragmentation Towards 3D Correlated Fragmentation</td>
<td>Organisers: R. Ent (Jefferson Lab), A. Bacchetta (INFN &amp; University Pavia), V. Barone (Piemonte Orientale U, Alessandria), T. Rogers (C.N.Yang ITP, Stony Brook University)</td>
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<tr>
<td>16 - 20 November</td>
<td>Information and Statistics in Nuclear Experiment and Theory: Inset-3</td>
<td>Organisers: B. Szpak (INP, Polish Academy of Sciences, Krakow), D. Ireland (University of Glasgow), W. Nazarewicz (University of Tennessee, Knoxville &amp; Oak Ridge National Laboratory)</td>
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<tr>
<td>30 November - 11 December</td>
<td>New perspectives on Photons and Dileptons in Ultrarelativistic Heavy-Ion Collisions at RHIC and LHC</td>
<td>Organisers: T. Hatsuda (RIKEN Nishina Center), G. Baym (University of Illinois at Urbana-Champaign), K. Shigaki (Hirosima University), A. Drees (Stony Brook University)</td>
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ECT* Doctoral Training Programme 2015

April 13 - May 22
Computational Nuclear Physics
Hadrons, Nuclei and Dense Matter

Programme Coordinator
Maria Paola Lombardo (INFN)

Students’ Coordinator and Advisor
Georges Ripka (Saclay and ECT*)

Lecturers and topics

Thomas Schaefer (North Carolina State University, USA)  Strong interactions, QCD and nuclear physics
Tetsuo Hatsuda (RIKEN, Japan)  Lattice QCD approach to nuclear physics
Amy Nicholson (University of California, Berkeley, USA)  Lattice methods for many body systems
Giuseppina Orlandini (University of Trento and TIPFA, Italy)  Ab initio methods: from few to many nucleons
Francesco Pederiva (University of Trento and TIPFA, Italy)  Ab initio many-body methods: variational and diffusion Monte Carlo
Morten Hjorth-Jensen (Michigan State University, USA and University of Oslo, Norway)  Ab initio many-body methods: configuration interaction theory, many-body perturbation theory and coupled cluster theory
ECT* Nuclear TALENT School 2015

July 20 - August 07

Few-body methods and nuclear reactions

Organizers
Alejandro Kievsky (INFN and University of Pisa)
Giuseppina Orlandini (University of Trento)

Student Coordinator and Advisor
Morten Hjorth-Jensen (Michigan State University and University of Oslo)

Local coordinator
Susan Driessen (ECT*)

Topics
The Faddeev and Faddeev-Yakubovsky approaches
Methods based on basis expansions
Applications to hadronic and electroweak reactions

Lecturers
Nir Barnea (The Hebrew University of Jerusalem), Mario Gattobigio (INLN - University of Nice), Alejandro Kievsky (INFN Pisa)
Rimantas Lazauskas (IPHC Strasbourg), Andreas Nogga (FZ Jülich), Giuseppina Orlandini (University of Trento)
ECT* Scientific Events 2015

- Workshops, Collaboration Meetings and Training Programs

Nuclear Structure and Reactions
Nuclear Astrophysics

QCD and Hadron Physics

Hot and Dense QCD Matter
Relativistic Heavy Ions
LHC Physics

Related Areas:
- Astrophysics & Cosmology
- Condensed Matter Physics
- Quantum Many-Body Systems
- Interdisciplinary Projects

ECT*, Trento, Italy

www.ectstar.eu
In this chapter, we present the European landscape achieved high visibility and full participation of closely collaborating laboratories that enjoy the strong theoretical and experimental physicists, an absolute prerequisite for the advancement in the various areas of research. Infrastructures and Upgrades to three, in terms of capability. Today, the European and international scientific community by:

- Meetings per year on the topical problems listed.
- Support of the European Union via their Framework Programme (FP) 7. Access to these research infrastructures is generally open to researchers whose proposals have passed the scrutiny of programme advisory committees.
- Both ECT* in Trento and the Jülich Supercomputer Centre (JSC), a European competitive leadership-class, highly scalable machine which consists of interdisciplinary proposals that explore highly relevant scientific fields.

Furthermore, presently and in the years ahead, ECT* faces new opportunities and challenges in the gradual transition from one funding model to another, from the 7th Framework Programme to Horizon 2020. This is especially the case for the ECT* project, which is a long-term scheme that started in 2007 and will continue until 2019.

ECT* is the only centre of its kind in Europe and is highly appreciated by the large and diverse European and international scientific community. The ECT* project is overseen by an internationally composed Scientific Advisory Board. ECT* is the only centre of its kind in Europe and administers scientific and financial activities related to the European and international scientific community.

The collaboration in the field at European and global level. The ECT* project is overseen by an internationally composed Scientific Advisory Board. ECT* is the only centre of its kind in Europe and administers scientific and financial activities related to the European and international scientific community.

3.1.1 Theory and Computing

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Research @ ECT*

- Senior Research Associates (SRA) and Postdocs (PD) (Status: March 2015)
  - Daniele Binosi (SRA - Italy)
  - Alexis Diaz-Torres (SRA - Cuba / Germany)
  - Daniel Gazda (PD - Czech Rep.) (until Sept. 2015)
  - Philipp Gubler (PD - Switzerland / Japan)
  - David Ibanez (PD - Spain) (until Sept. 2015)
  - Daisuke Satow (PD - Japan)
  - Dionysis Triantafyllopoulos (SRA - Greece)

- PhD Students
  - Maddalena Boselli (PhD - FBK/ECT*- UniTN - Italy)
  - Robert Lang (Visiting PhD - TUM/ECT* - Germany)

- ECT*'s research output 2014: (see www.ectstar.eu)
  - 37 publications in high-ranking international journals + 20 preprints
  - 29 invited talks at international conferences, workshops, seminars etc. abroad
Since January 2015:

Interdisciplinary Laboratory for Computational Science of FBK has become a Research Unit of ECT* with its own separate budget and administrative support from FBK.

5 ECT* - LISC researchers:

Maurizio Dapor (Head of ECT*-LISC Research Unit), Silvio a Beccara, Lucia Calliari, Giovanni Garberoglio, Simone Taioli

ECT* - LISC research activities in the “Related Areas”: many-body theory, computational physics, condensed matter physics, complex bio-systems...
ECT* Postdoc Search 2015

- Two ECT* postdoc positions to be filled in autumn 2015 (Application period deadline: end of December 2014)

- 93 applications received

One applicant each from:
Argentina, Austria, Egypt, Ethiopia, Finland, Israel, Malaysia, Mexico, Portugal, Romania, Russia, Vietnam, Yemen

Extensive selection procedures in January - February 2015:

Short list of 6, offers sent to two prime candidates
(G. Beuf, C. Mezrag - both French)
Additional postdoctoral position at ECT* sponsored by INFN - TIFPA:

INFN CALL 16761/2014

Call for the award of one post-doctoral fellowship in the field of theoretical physics

The Italian Institute for Nuclear Physics – INFN - offers a one year post-doctoral fellowship, renewable for a further year, for a research activity to be carried on at TIFPA (Trento Institute for Fundamental Physics and Applications) and based at ECT* (European Centre for Theoretical studies in nuclear physics and related areas) on the following subject:

**Structure and dynamics of nuclei and nuclear matter**

Committee: F. Pederiva (Uni Trento), A. Bonaccorso (INFN Pisa), W. Weise (ECT*)

Meetings held in December 2014 - 3 top candidates nominated out of 17 applicants

Position offered to:

1. Chen Ji (TRIUMF) Few-body effective field theory of halo nuclei and cold atoms
Reminder of ECT*
Annual Running Budget 2014

**total: 1.12 M€**

- **France**: 0.10
- **Germany**: 0.13
- **Italy**: 0.11
- **Others**: 0.09
- **Eu Projects**: 0.21
- **QUTE-Europe**:
- **HadronPhysics**
- **Study of Strongly Interacting Matter**
- **ENSAR**

Belgium, Czech Republic, Denmark, Finland, Hungary, the Netherlands, Poland, Romania, UK

**ECT* | European Centre for Theoretical Studies in Nuclear Physics and Applications**

**Centro Europeo di Studi teorici**
**TENTATIVE**
Annual Running Budget 2015

**total: 1.1 M€**

- France: 0.10 M€
- Germany: 0.12 M€
- Italy: 0.15 M€
- Others: 0.09 M€
- Eu Projects: ~ 0.16 M€

Belgium, Czech Republic, Finland, Hungary, the Netherlands, Poland, Romania, United Kingdom

+ self-supported activities
Budget Status 2015

- Meeting of EJFRC (ECT* Joint Finance Review Committee) 3 October 2014:
  Protocols of Agreement extended by almost all of the contributing countries.
  Exception: Denmark stopped payments from 2015 onward
  (i.e. Finland remains the only Nordic country contributing to ECT*)

- FBK contribution to ECT* stable at 480 k€ in 2015.

- German BMBF contributions for both 2015 + 2016 (200 k€) transferred already early this year.

- Additional INFN contribution (TIFPA postdoc) to ECT* in 2015

- EU projects: ECT* as TNA (Transnational Access) Facility:
  - ENSAR2 (ECT*; 229 k€ for 4 years) - on reserve list
  - HadronPhysicsHorizon (ECT*; 540 k€ for 3 years) - application unsuccessful

- Additional contributions to workshops in 2015
  - From ESF-POLATOM through BEC Center: 40k €
  - From Korea (Asia-Pacific Center for Theoretical Physics): 10k US $

- Number of self-supported workshop participants to be increased in 2015
Next Director of ECT*

- Search Committee 2014:
  - Nicolas Alamanos (CEA Saclay), Baha Balantekin (U Wisconsin, Madison), Simon Hands (U Swansea), Kris Heyde (U Ghent), Achim Schwenk (TU Darmstadt)
  - Jochen Wambach (TU Darmstadt)

... accepted nomination by the Board
agreed to be available starting from January 2016

- Meeting with Secretary General of FBK (Andrea Simoni) on 17 February
- Contract in preparation and foreseen to be signed in late summer 2015