

Update on the (CH participation to the) ECT*

CHPP Board 2024-01

Gilberto Colangelo

Zoom-CH, 25.3.2024

ECT* mission



- ✓ to be a Centre at the frontline of research in theoretical nuclear physics
- ✓ to promote active contacts between theory and experiments, and to related areas of research
- ✓ to further the training of young researchers
- established in 1993
- Institutional member of ESF-Expert Committee NuPECC (Nuclear Physics European Collaboration Committee)
- community-driven, bottom-up approach

News 2023

ECT* celebrated its 30th anniversary in 2023

- **In 2023 it underwent a full review by an external committee with very positive outcome (available upon request)**

Sonia Bacca (Mainz), Barbara Erazmus (Nantes), Richard Hall-Wilton (FBK), **Maria Paola Lombardo** (INFN) Piotr Magierski (Warsaw), Ulf-G. Meißner (Bonn), Sanjay Reddy (Seattle)

- **The interim Director, Gert Aarts, ended his mandate and a new one has been nominated Ubirajara van Kolck (Orsay)**
- **Most MoUs have to be renewed, ours too**
- **I have been asked to join the scientific board starting 2024**

2023 PROGRAMME OF ACTIVITIES

JANUARY

30.1-2.1 Structure and topology of RNA in living systems
L. TUBIANA (University of Trento), S. PASQUALI (University Paris Cité), A. BOZIC (JIS, Ljubljana)

FEBRUARY

20-24.2 LaVA Meeting
C. BONANNO (INFN Firenze), M. F. LOMBARDO (INFN Firenze), M. FEARDON (Trinity College Dublin)

MARCH

13-17.3 Holographic Perspectives on Chiral Transport
K. LANDSTEINER (IFT-UAM/CSIC Madrid), U. GURSOY (University of Utrecht), M. KAMINSKI (University of Alabama), D. KHARZEEV (Stony Brook)

20-24.3 The Gradient Flow in QCD and other Strongly Coupled Field Theories
C. MONAHAN (William & Mary), R. HARLANDER (University of Aachen), A. HASENFRAITZ (University of Colorado, Boulder), O. WITZEL (Siegen University)

MAY

2-5.5 Quantum Science Generation | QSG
D. DE BERNARDIS (INO-CNR BEC Center), V. AMITRANO (University of Trento - INO-CNR), A. BALDAZZI (University of Trento), A. BERTI (University of Trento - INO-CNR), I. CARUSOTTO (INO-CNR BEC Center), D. CONTESSI (University of Trento - INO-CNR), A. NARDIN (University of Trento - INO-CNR), L. PAVESI (University of Trento, Italy)

15-19.5 Color Glass Condensate at the Electron-Ion Collider*
D. TRIANTAFYLLOPOULOS (ECT*), N. ARMESTO (University of Santiago de Compostela), E. IANCU (University of Paris-Saclay, IPHT), T. LAPPI (University of Jyväskylä)

22-26.5 From First-Principles QCD to Experiments*
M. HUBER (Giessen University), G. EICHMANN (LIP Lisboa), M. P. LOMBARDO (INFN Firenze), P. MARIN (Iowa State University), J. M. PALOWSKI (Helsinki University)

29.5-1.6 2nd CMS Heavy Ion Workshop: Bringing Together the LHC Heavy Ion Community
G. KRINIAS (The University of Kansas), Y.J. LEE (MIT), W. LI (Rice University), C. LOURENCO (CERN), A. STAHL (CERN)

JUNE

5-9.6 Nuclear and Particle Physics on a Quantum Computer: Where do we stand now?
A. BAZAVON (Michigan State University), S. DAVOODI (University of Cambridge), S. MUKHERJEE (University of Cambridge), S. SCHEIDT (University of Cambridge), T. JARROLD (University of Cambridge), H. KUBIS (HISKP Bonn), D. LEBSCH (FSU Tallahassee)

19-23.6 Quantum Simulation of Gravitational Problems on Condensed Matter Analog Models
I. CARUSOTTO (INO-CNR BEC Center), R. BALBINOT (University of Bologna), G. FERRARI (University of Trento), M. RINALDI (University of Trento)

26-30.6 Machine Learning for Lattice Field Theory and Beyond
D. HACKETT (MIT), G. AARTS (Swansea University & ECT*), D. BACHTIS (Swansea University), B. LUCINI (Swansea University), P. SHANAHAN (MIT)

JULY

3-7.7 COLMO: Quantum Collapse Models Investigated with Particle, Nuclear, Atomic and Macro systems
C. CURCCHANU (INFN-LNF), A. BASSI (University and INFN Trieste), M. DERAKHSHANI (Rutgers University), L. DIOSI (University Budapest), S. DONADI (INFN Trieste), K. PISCICCHIA (CREAF)

10-28.7

Doctoral Training Program: Ab Initio Methods and Emerging Technologies for Nuclear Structure
C. BARBERI (University of Mainz), A. ROGGERO (University of Trento)

10-14.7

Tensor Spin Observables **
K. SLIFER (University of New Hampshire), D. HIGINBOTHAM (JLab), D. KELLER (University of Virginia), E. LONG (University of New Hampshire)

17-21.7

Short-Distance Nuclear Structure and PDF *
N. FOMIN (University of Tennessee), J. ARRINGTON (LBNL), W. COSYN (Florida International University), N. ROCCO (Fermi National Laboratory)

31.7-4.8

Quantum Sensing and Fundamental Physics with Levitated Mechanical Systems
A. VINANTE (INFN-CNR), D. BUDKER (Johannes Gutenberg University Mainz), G. HETET (École Normale Supérieure Paris), H. ULBRICHT (University of Southampton)

AUGUST

21-25.8 ECT*-APCTP Joint Workshop: Exploring Resonance Structure with Transition GPDs *
S. DIEHL (Johannes Liebig University Giessen), V. BRAUN (University Regensburg), K. JOO (University of Connecticut), Y. OH (Kyangpook National University), C. VAN HULSE (University of Alcalá, Madrid), C. WEISS (JLab)

SEPTEMBER

4-8.9 Many-Body Quantum Physics with Machine Learning
A. RIOS HUGUET (Instituto de Cosmos Sciences, University of Barcelona), G. CARLEO (EPFL), E. INACK (PITP), A. LOVATO (ANL & TIFPA)

11-15.9

MICRA2023: Microphysics in Computational Relativistic Astrophysics*
E. O'CONNOR (Stockholm University), C. FROHLICH (Carolina State University), A. PEREGO (University of Trento)

18-22.9

Parton Distribution Functions at a Crossroad *
M. DING (Helmholtz Zentrum Dresden-Rossendorf), J. PAPAVALSILIOU (University of Valencia), C. QUINTANS (LIP, Lisbon), C. ROBERTS (Nanjing University)

25-29.9

Strongly Interacting Matter in Extreme Magnetic Fields *
S. VARESE (UNICAMP), A. AYALA (UNAM), D. BLASCHKE (University of Wrocław), G. ENDRODI (University of Bielefeld), R. FARIAS (Universidade Federal de Santa Maria)

OCTOBER

9-13.10 ROCKSTAR: Towards a Roadmap of the Crucial measurements of Key observables in Strangeness reactions for neutron stars equation of state **
A. SCORDO (INFN-INFN), D. BOSNAR (University of Zagreb), C. CURCCHANU (INFN-INFN), A. RAMOS (Institut de Ciències del Cosmos, Barcelona), F. SAKUMA (RIKEN) O. VAZQUEZ-DOCE (INFN-INFN), I. VIDANA (INFN Catania)

23-27.10

Critical Stability of Few-Body Quantum Systems *
A. KIEVSKY (INFN Pisa), T. FREDERICO (Instituto Tecnológico de Aeronáutica), O. FYNBO (Aarhus University), J.M. RICHARD (Institut de Physique des 2 Infinis de Lyon)

NOVEMBER

20-24.11 ALFACA: modern Algorithms in machine learning and data analysis: from medical Physics to research with Accelerators and in underground laboratories **
F. NAPOLITANO (INFN Frascati), R. DEL GRANDE (TU Munich), F. GROSA (CERN), M. SKURZOK (Jagiellonian University Krakow)

*STRONG-2020 supported workshop **EUROLABS supported workshop

The ECT* is part of the Bruno Kessler Foundation. The Centre is funded by the Autonomous Province of Trento, funding agencies of EU Member and Associated States, INFN-TIFPA, and has the support of the Department of Physics of the University of Trento. The Director of the ECT* is Prof. Gert Aarts (Trento and Swansea University)

For information: staff@ectstar.eu | www.ectstar.eu

2023 Activities

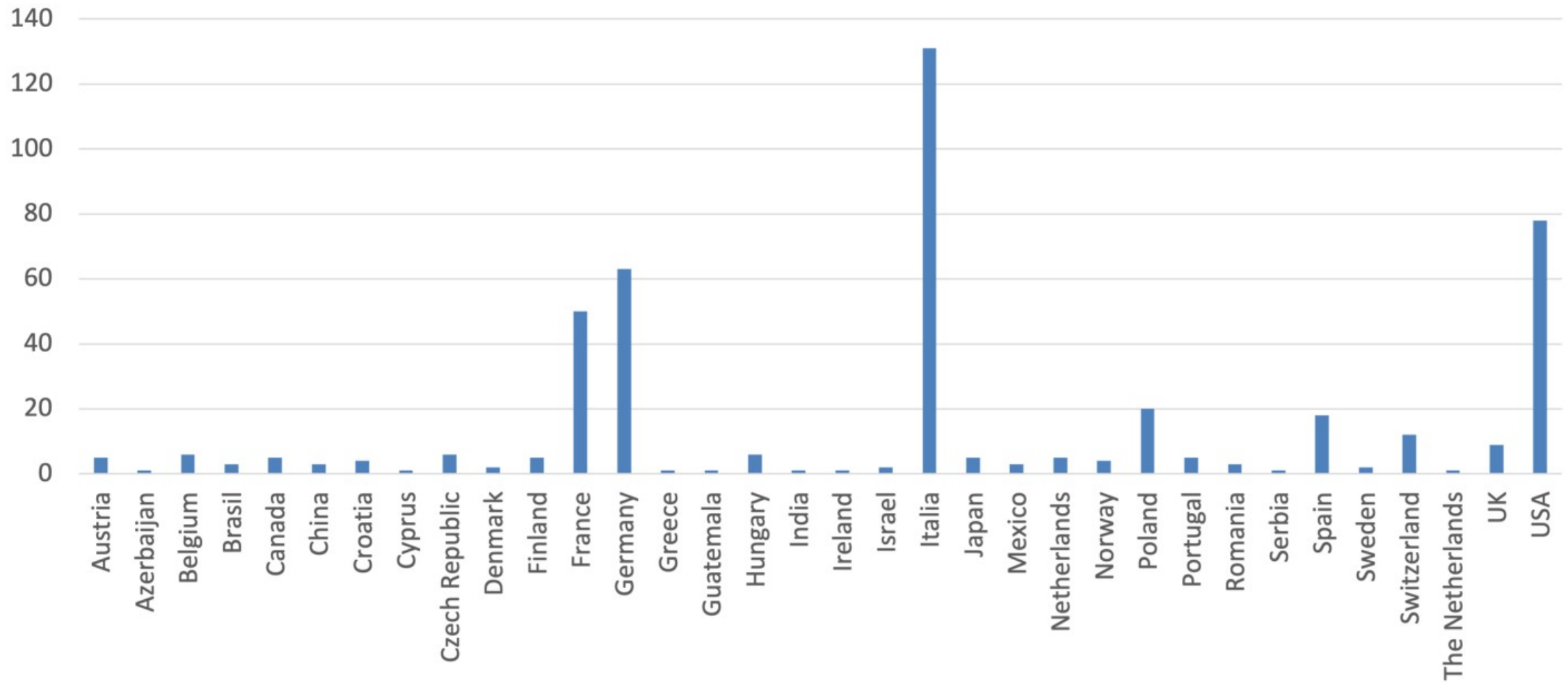
full programme:

24 workshops and collaboration meetings
from January to November
selected by Scientific Board

DTP: Ab Initio Methods and Emerging Technologies for Nuclear Structure

Participation

ECT* participants and visitors 2022



2023 projection

FUNDING (projected)	Provision 2023
FBK - AdP	223,455 €
PNRR - Quantum	61,841 €
Funding Agencies	409,341 €
Funding on workshop and projects	40,000 €
EU-Project STRONG2020	91,305 €
EU-Project EUROL-LABS	66,250 €
TOTAL FUNDING	892,192 €

<i>Provisional Budget</i>	2023
Workshop and Seminars	232,000 €
Research Personnel**	316,150 €
Visitors	13,000 €
Training	58,000 €
Administrative & Tech Staff	134,154 €
Directorate	65,191 €
Hardware & Software	18,000 €
Other costs*	40,000 €
Board	5,000 €
TOTAL	881,495 €

*Library, Licenses, Consumables

NOTE: The extra-maintenance costs for the Villa in 2023 are estimated in 245K Euro, charged on FBK Budget

Budget 2023/2024: comments

- 2023: budget very tightly constrained
- 2024 (planning):
- community appetite: 31 workshop proposals submitted
only about 22 can be supported
 - increased cost of living/inflation
 - increase budget for workshop and training programme

Contributions for 2023

Contributions of European Funding Agencies and Institutions 2023		
COUNTRY	AMOUNT	RECEIVED ON
Belgium FWO (Flemish)	10,000	08/06/2023
Croatia	7,400	will not arrive
Czech Republic	10,000	11/09/2023
Finland	8,000	16/06/2023
France CEA (Saclay)	35,000	will arrive soon
France CNRS	45,000	23/03/2023
Germany	122,000	15/02/2023
Hungary	2,000	23/02/2023
Italy (INFN)	110,000	12/07/2023
Netherlands	8,000	12/06/2023
Poland	10,000	unclear
Romania	6,000	28/06/2023
Dubna (JINR)	XXXXX	XXXX
Switzerland	9,981	03/10/2023
UK	25,960	01/08/2023
Total expected:	€ 409,341	
Total received:	€ 391,941	

Proposed/ committed contributions 2024-2029

European Funding Agencies and Institutions Committed/proposed contributions 2024-2029	
COUNTRY	AMOUNT
Belgium FWO (Flemish)	11,000
Croatia	
Czech Republic	10,000
Finland	8,000
France CEA (Saclay)	20,000
France CNRS	45,000
Germany (TBC)	122,000
Hungary	2,000
Italy (INFN)	110,000
Netherlands	8,000
Poland	
Romania	6,000
Dubna (JINR)	xxxx
Switzerland	
UK	50,000
Austria (TBC)	10,000
Spain (TBC)	10,000
Total	€ 412,000

Review

Executive Summary

The RC found that the ECT* is performing its core mission well: executing a successful and impactful workshop program and generating significant scientific output. The training program is appreciated as well. The Directors of ECT*, and the local administrative staff and researchers are to be commended for maintaining this during the pandemic. We appreciate Gert Aarts, the current *interim* Director, for his willingness to step in and take charge in the absence of a regular full-time Director of the Centre.

The challenges faced by the Centre during the past few years, which we identify and discuss in the report, underscore the need for a full-time Director.

A reduction in the total budget during this period is making it difficult to maintain the number of workshops and support of the participants at the optimal level.

In this context, the RC has examined the following points and formulated corresponding top-level recommendations:

Review: summary for Director

- enhance engagement with related areas, e.g. gravitational waves and nuclear astrophysics, quantum computing (in progress)
- develop engagement beyond current ECT* associates: dissemination of opportunities
- closer engagement between Director, Scientific Board and funding agencies
- reach out to potential new funding bodies
- local research activities (permanent staff) can be closer linked to other FBK activities, including funding opportunities

CHIPP decision/recommendation on the new MoU

- **Confirm Swiss support to the ECT***
- **Recommend to SNF to renew the MoU**
- **Recommend to increase financial support from 10 → 20 kCHF**