



# GIREP Newsletter

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## EDITOR'S SECTION

Dear Colleagues,

Year 2020 started with establishing the new GIREP vzw Board, so in this issue the new GIREP members that will lead our organization for the next four years are presented.

We also provide the minutes of the GIREP vzw Assembly 2019 that was held in Budapest during the GIREP-ICPE-EPEC-MPTL Conference. We report on the current status of the GIREP latest and future publications and the GTGs activities.

We present the report on the GIREP-ICPE-EPEC-MPTL Eötvös-Year 2019 Conference in Budapest, Hungary prepared by the organizers together with a short summary of the survey on the quality of the conference.

The 3<sup>rd</sup> WCPE is announced by the President of the HNUE, the organizer in Vietnam. We also present a brief report on the European Quantum Flagship event in Helsinki, 2019

On the last page we would like to draw your attention to all benefits for being a GIREP vzw member.

On behalf of the GIREP Committee I would like to invite you to contribute to the GIREP Newsletter. Please, inform us about upcoming events (also at the national level), new initiatives and all other announcements that are relevant to GIREP's topics of interest, spirit and mission, and which you would like to share with the GIREP community.

The deadline for sending information to be included in the next issue is the 30<sup>th</sup> of April, 2020.

**GIREP Board wishes you a Happy New Year 2020!**

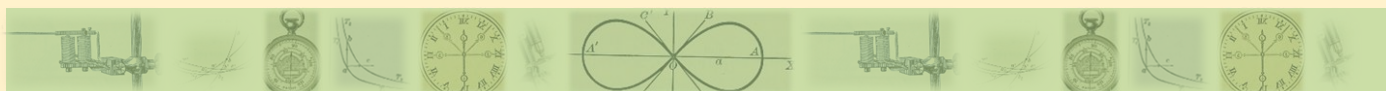
Dagmara Sokołowska

Starting from February 2013 the GIREP newsletter has been recorded permanently as online publication in the ISSN register as follows:

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## THE GIREP VZW BOARD AND AUDITOR ELECTIONS FOR TERM 2020-2023

The elections for members of the new GIREP Board and GIREP Auditor was organized on-line, via the electronic system available for GIREP members. The schedule of the election was announced during the GIREP vzw General Assembly in July 2019. Prior to the election two subsequent e-mails were sent to GIREP members encouraging them to take part in voting for the new GIREP vzw Board and providing all information about the schedule, the mechanism of voting and the rules of the election of GIREP vzw Board members. Yet another information was sent toward the end of the election period. The election for six positions was held in the following steps:

- One candidate for the GIREP vzw Auditor and seven candidates for the GIREP vzw Board members were nominated by 31<sup>st</sup> of October, 2019.
- On-line voting was available for GIREP vzw members throughout entire November 2019. Approximately 25 GIREP vzw members gave their vote via the electronic election system.
- The Auditor and six GIREP vzw members (elected on the based on the number of votes cast) were announced on the 10<sup>th</sup> of December on the GIREP vzw web site.

On the 22<sup>nd</sup> of January 2020 the new GIREP vzw Board participated in their first Skype meeting. During the meeting the roles of the GIREP vzw Board members were redistributed and agreed upon unanimously.

We would like to announce that in period 2020-2023 the GIREP vzw Board will consist of:

- **the President of GIREP, Marisa Michelini**, University of Udine, Italy
- **the Vice-President of GIREP in charge of activities aimed at universities and research, Dagmara Sokołowska**, Jagiellonian University, Krakow, Poland
- **the Vice\_president of GIREP in charge of activities aimed at teachers, Wim Peeters**, PONTOn vzw, Flanders, Belgium
- **the GIREP Secretary, Eilish McLoughlin**, Dublin City University, Ireland
- **the GIREP Treasurer, Paul Logman**, Leiden University, Netherlands
- **the GIREP Media Officer, Claudio Fazio**, University of Palermo, Italy

**Ton Ellermeijer** from Foundation CMA, Amsterdam, Netherlands was elected for the GIREP vzw Auditor.

Persons interested in the details of voting are referred to the member area in [girep.org](http://girep.org).

The GIREP vzw Board and the Auditor would like to thank all GIREP vzw members who participated in voting.



## PRESENTATION OF THE GIREP VZW BOARD MEMBERS AND AUDITOR FOR TERM 2020-2023

Below the members of the GIREP vzw Board in term 2020-2023 are shortly presented.

### **Prof. Marisa Michelini**

Department of Math Informatics and Physics in the University of Udine, Italy

Physics and Math Section of DCFA University of Udine, Italy

Marisa Michelini is full professor in physics education in Udine University, Italy, where she is rector delegate for Didactic Innovation and responsible of the Research Unit in Physics Education. For many years she played many roles in GIREP – she was GIREP Vice-President, Treasurer and Auditor. She has been GIREP President (since 2012), committee member of the Multimedia Physics Teaching and Learning (MPTL), director of the Italian University Consortium on Education and Guidance (GEO), member of the Permanent Commission for Education of the Italian Physical Society and honorary member of the Italian Association for Physics Teaching (AIF).

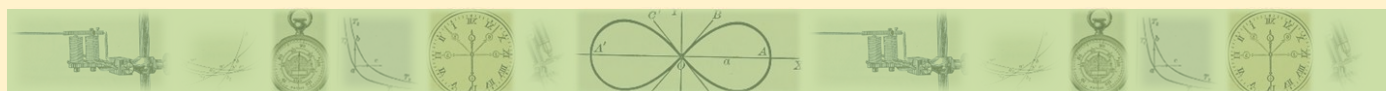
Marisa Michelini is appreciated by very many people for her activities in Physics Education Research (PER) and Physics Education (PE) in Europe and elsewhere. The list of initiatives she has started or helped to start is very long. Generations of GIREP members do remember well what she has been doing for this community for many years. She has contributed to PER and PE activities aiming at widening the number of people involved and at highlighting the emerging contributions and experiences. But for her friends and all who know Marisa well a very impressive aspect is her enthusiasm, it shows in big and small initiatives. In addition, she strongly respects the value of institutions; because of this attitude Marisa has several times accepted to carry on heavy commitments. One of them was being GIREP President in last years.

### **Dr. Dagmara Sokołowska**

Institute of Physics, Jagiellonian University, Krakow, Poland

Dagmara Sokołowska has been the GIREP vzw Secretary (2014-2019).

Dagmara Sokołowska works as an adjunct in at the Faculty of Physics, Astronomy and Applied Computer Science of the Jagiellonian University in Krakow, Poland. Dagmara got her PhD in physics, doing research in the field of soft matter. For the last 16 years she has been involved in physics education for talented high school students, as well as remedial classes for students entering physics studies at the faculty. Since then she has been also organizing science teacher trainings in IBL, workshops for children, teenagers and seniors. She is the Editor of *Foton* and *Neutrino* quarterlies, publishing articles on physics, physics education and physics popularization. In 2007 she initiated *Świetlik* - the Polish National Contest in Science for Primary School, being successful to involve 48 000 pupils in the 12th run in 2019. Dagmara has been participating in GIREP conferences regularly since 2006 and in 2016 she organized GIREP Seminar and GIREP 50th Anniversary session in Krakow. Her main interest is implementation of innovative teaching and learning strategies, including assessment strategies, and transferring science education research to the schools. She was a partner in five European projects on science education: the Fibonacci Project, SECURE, SAILS, ACK and (currently) 3DIPhE.

**Wim Peeters**

PBDKO vzw (work) and PONTOn vzw (ceo), Belgium

Katholiek Onderwijs Vlaanderen vzw (work) and PONTOn vzw (ceo), Belgium

Wim Peeters has been GIREP Vice-President (2011-2019) responsible for activities aimed at teachers and representatives.

He was a secondary school physics teacher for 27 years. During the last 18 years his job gradually shifted towards a 50% teachers coaching job and 30% international projects and courses. This implies in-service contacts on almost a daily base with teachers in physics and sciences and giving trainings in a wide field of subjects (didactics, pedagogy, teaching strategies, practitioners inquiry, professional learning groups in education) for about 500 teachers and principals spread over about 200 schools in Flanders. He is also curriculum maker. Starting with a threefold participation at CERN's HST teacher programme, Wim became highly engaged in EU projects, ranging from physics to more general science subjects, always focussing on the role and needs of (physics) teachers. Examples are MOSEM, Fibonacci, SECURE, Linpilcare and since September 17 the Erasmus+ project 3DIPhE with key topics professional learning groups and evidence based teaching and learning for physics and science teachers. He established (with others) a non-profit organisation, PONTOn vzw, promoting and supporting science education in Flanders and Europe.

**Dr. Eilish McLoughlin**

Dublin City University, Ireland

Eilish McLoughlin Ph.D., F.Inst.P., is an Associate Professor in the School of Physical Sciences and Director of the Centre for Advancement of STEM Teaching and Learning (CASTeL) at Dublin City University. She is internationally recognised for her leadership in physics education research across formal, informal and non-formal contexts, through evidence-based programmes and initiatives and coordination of over 50 national and international projects and as Conference Chair of GIREP-ICPE-EPEC 2017. She is committed to integrating research, teaching and learning in physics education and physics teacher education at both pre-service and in-service levels. Her research interests are in the implementation of research-led approaches, such as inquiry and interdisciplinary teaching, learning and assessment in STEM education - across primary, secondary and tertiary level.

**Dr.ir. Paul Logman**

LION, Leiden University, Netherlands

Leiden University, The Netherlands, Faculty of Science, Institute of Physics (LION): director of practicals, lecturer & Interfaculty institution Leiden University Graduate School of Teaching (ICLON): Teaching Methodologist for Physics

Paul Logman has been a secondary school physics teacher for 23 years until 2017. During his years of teaching he has designed new science laboratories in two schools and introduced completely open experiments for pupils at every level in the Dutch school system. In 2007 he slowly shifted from the secondary level to the academic level by working as a teacher-researcher in the extreme ultraviolet group (XUV) at AMOLF. In 2009 he started his PhD-research in physics education at the University of Amsterdam resulting in a thesis called 'Students Reinventing the General Law of Energy Conservation'. From 2014 to 2017 Paul did a postdoc on 'Internships to motivate pupils for STEM-education' at the VU university of Amsterdam. Since 2017 he has two functions at Leiden university: teacher trainer for physics for one day a week and director of practicals and lecturer at the physics institute for the rest of the week. In the latter function he has innovated and modernized all Bachelor practicals for physics and astronomy.



For the various academic functions mentioned above Paul has presented his educational research findings at various conferences among which the WCPE 2012 conference and various GIREP and (Dutch) WND conferences. From 2015 onwards Paul has been a member of the editorial board of several physics education journals. His interest mostly lies in promoting the various purposes of practicals from the primary to the academic level. Furthermore, he has expertise in teaching the subject of energy and in organizing STEM internships for secondary school pupils.

**Prof. Claudio Fazio**

Dipartimento di Fisica e Chimica - Università di Palermo, Italy

Claudio Fazio, Ph.D., is an associate professor in Physics Education at the University of Palermo, where he teaches General Physics, Physics Education and History of Physics. He also teaches in courses for pre-service physics teacher education and is responsible for all secondary school teacher education activities at the University of Palermo. He has been actively contributing to the GIREP meetings and conferences since the 2000 GIREP International Conference in Barcelona and he has co-organized the 2014 GIREP International Conference in Palermo. He is recognized for his research on the effects of Active Learning approaches on student conceptual understanding and lines of reasoning, and is responsible of the GIREP "Strategies for Active Learning" Thematic Group. His research interests are also in the study and development of teacher Pedagogical Content Knowledge, and in the study and use of quantitative analysis methods in research, with particular reference to cluster and implicative analyses.

**Prof. Ton Ellermeijer**

Foundation CMA, Amsterdam, Netherlands

Ton Ellermeijer, Ph.D., is Managing Director of CMA. He has been member of GIREP for many years, and served first as Vice-President (2003-2006) and subsequently as GIREP President (2006-2012); since 2017 he has been GIREP auditor. During his presidency he initiated many successful initiatives of GIREP like the first WCPE.

Ton is an experienced researcher in science education, curriculum developer and teacher trainer. He was Director of the AMSTEL Institute of the University of Amsterdam from 1997 up to 2010. Ton Ellermeijer received the Minnaert Prize for his contributions to Dutch Physics Education (1999) and the ICPE Medal (International Commission of Physics Education of the IUPAP, 2009) for his contribution to Physics Education worldwide.

**GIREP vzw COMMITTEE ACTIVITIES IN VI-XII 2019**

Since the last Newsletter No. 61, published in June 2019 the GIREP Committee (GC) took part in five Skype and two in-person meetings. During the second half of the year 2019 the work of the GC has focused on:

- GIREP vzw Elections of the GIREP Board members for term 2020-2023
- Development of GIREP Thematic Groups and reports on their contribution to GIREP-ICPE-EPEC-MPTL Conference 2019 in Budapest
- Issues related to the content and organization of the 3<sup>rd</sup> World Conference on Physics Education in Hanoi, Vietnam
- Proposals for organization of GIREP-MPTL seminar 2020 in Malta
- Proposals for the GIREP conference in 2021
- GIREP vzw cooperation with eleven partner organizations on the basis of signed agreements and with two other organizations without a signed agreement
- GIREP representation in ESERA Conference 2019
- Involvement of GIREP national representatives
- GIREP Books published by Springer and GIREP Conference Proceedings published by IOP
- The GIREP web site and newsletter



## THE ANNUAL GIREP vzw GENERAL ASSEMBLY 2019

### Minutes

The GIREP vzw General Assembly 2019 was held in Budapest during the GIREP-ICPE-EPEC-MPTL Conference 2019 Budapest in room KF51 Auditorium Maximum of the Budapest University of Technology and Economics, address: Műegyetem rkp. 5, 1111, on Thursday, the 4<sup>th</sup> of July 2019 at time 4:15 p.m. (first convocation) and 4:30 (second convocation) with the following Agenda:

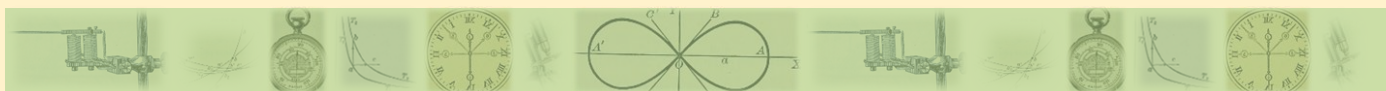
1. Approval of the minutes of the General Assembly 2018.
2. GIREP vzw Annual Report 2018:
  - a. GIREP vzw activities
  - b. Financial report
  - c. Auditor's report
3. Approval of the GIREP vzw Annual Report 2018.
4. Discharge of the Board.
5. Activities in 2019 and in the further future:
  - a. GIREP Books
  - b. 3rd WCPE and GIREP Seminar 2020 in Malta
  - c. GTG activities
  - d. Others
6. Provisional financial report 2019.
7. Activities proposals by GIREP members.
8. Proposals for cooperation with GIREP vzw.
9. Varia.

Altogether 53 GIREP-ICPE-EPEC-MPTL Conference participants were present, and among them 37 GIREP vzw members including five members of the GIREP Committee (GC). An on-line participation in the General Assembly will not be available due to technical reasons.

The General Assembly started with voting on approval of GA 2018 minutes (37 votes pro, 0 counter voices, 0 abstentions).

Subsequently Dagmara Sokołowska, the GIREP vzw Secretary, presented an annual report on GIREP Committee activities in 2018. She reported five GIREP vzw Committee on-line meetings and two meetings in person, and informed about the main discussed issues, concerning:

- GIREP-MPTL Conference 2018 in San Sebastian, Spain
- GIREP-ICPE-EPEC-MPTL Conference 2019 in Budapest, Hungary
- 3rd WCPE and GIREP Seminar 2020, GIREP Seminar in Malta 2020
- GIREP cooperation with other partner organizations
- Development of GIREP Thematic Groups
- Involvement of GIREP national representatives
- Agreement with Springer on publishing GIREP Books and agreement with IOP on publishing GIREP Proceedings
- The first GIREP Book – Gesche Pospiech (Editorial); GIREP book on papers selected from GIREP Seminar 2016 (Springer); the book of papers selected from 2nd WCPE (Springer); GIREP-ICPE-EPEC 2017 Proceedings (IOP) and a book of selected papers (Springer); GIREP-MPTL conference 2017 Proceedings (IOP) and a book of selected papers (Springer)
- GIREP financial issues
- GIREP web site and Newsletter No. 60 (December 2018)
- GIREP medals



The report had been made available at: [http://girep.org/media/2018\\_GIREP\\_vzw\\_Annual\\_Report.pdf](http://girep.org/media/2018_GIREP_vzw_Annual_Report.pdf) and was sent as a link to all GIREP members on the 11th of June 2019.

Next the GIREP vzw Treasurer, Leos Dvořák presented the GIREP vzw Financial Report for 2018 (also available on-line at [http://girep.org/media/2018\\_GIREP\\_Financial\\_report.pdf](http://girep.org/media/2018_GIREP_Financial_report.pdf)) and Ton Ellermeijer, the GIREP vzw Auditor presented the Audit Report (published at [http://girep.org/media/2018\\_GIREP\\_Report\\_audit.pdf](http://girep.org/media/2018_GIREP_Report_audit.pdf)).

After clarifications and comments the GIREP vzw Annual Report 2018, including GIREP activities, GIREP Financial Report 2018 and provisional Budget for 2019, was approved in voting (37 votes pro, 0 counter voices, 0 abstentions) and the Board was discharged.

Next the replacement of Claudia Haagen-Schuetzenhoefer, the GIREP Vice-President by Gesche Pospiech for the last six months of the GIREP vzw Committee term was announced by the GIREP President, Marisa Michelini. She also outlined the Election 2019 process and schedule, mentioning at the same time five candidates that already had agreed to take part in the upcoming Election for the GIREP vzw members.

Subsequently, the GIREP vzw activities in 2019 and in the further future were outlined. Dagmara Sokołowska reported on the free access for all GIREP members to GIREP books already published by Springer, namely *The Role of Laboratory Work in Improving Physics Teaching and Learning* (eds. D. Sokołowska and M. Michelini) and *Upgrading Physics Education to Meet the Needs of Society* (ed. P. Pinto de Olivera). She also reported that two other GIREP books had just been published in cooperation with Springer: *Concepts, Strategies and Models to Enhance Physics Teaching and Learning* (eds. E. McLoughlin and P. Van Kampen) and *Mathematics in Physics Education* (eds. G. Pospiech, M. Michelini and B. Eylon).

Next the plans for two conferences: 3<sup>rd</sup> WCPE in Hanoi, Vietnam and GIREP-EPS-MPTL Seminar in Malta, organized by GIREP in collaboration with local universities were shortly presented by their local organizers. The report on GIREP Thematic Group and their activities and initiatives in the past year were presented in details, prepared by Claudia Haagen-Schuetzenhoefer and Gesche Pospiech.

Following this part Wim Peeters, the GIREP Vice-President presented a brief report on the Country Representatives Meeting during the GIREP-ICPE-EPEC-MPTL Conference 2019, as well as GIREP participation in Quantum Flagship Meeting in Grenoble. He also shortly mentioned GDPR issues in regards with GIREP vzw.

Marisa Michelini, the GIREP vzw President reported the initiative and the first meeting of the Quantum Physics Community in GIREP, the meeting with the Cooperating Bodies and the role of the GIREP Handbook.

In the last part of the General Assembly the GIREP members launched a few issues. Ian Bardeen drew attention to the need of establishing a new GTG for Laboratory Work. Ed van den Berg pointed out that too little attention was paid in GIREP vzw activities to climate change. Gerry Feldman mentioned an opportunity of sponsoring potential GIREP summer schools and asked to contact him if anybody would like to take this opportunity. David Sands argued that young people working in the field of physics education needed additional support, more than others working in education in other disciplines. Ian Lawrence asked an open question what publishing support could be initiated by GIREP for teachers who did not want to go to research but just wanted to teach better.



## GIREP THEMATIC GROUPS (GTG)

GIREP Thematic Groups (GTG) are focused communities of GIREP members interested in sharing their expertise in particular facets of physics education, from working with children, through undergraduate work, to teacher training. The aim of the GTG is to stay in touch as critical friends, exchanging thoughts, materials and findings from the varied contexts in which we work and contribute to GIREP activities on the topic of GTG. The leader of a GTG takes responsibility for involving and organising the participation of active colleagues in the GTG in the conferences: offering an activity (workshop or poster-symposium, symposium) in each Conference or Seminar of GIREP. GTGs come into existence when someone offers to run one, and applies to the GIREP Committee. If the negotiations go well the GTG is announced in the newsletter.

### GTG on Energy

- Group Leader: Paula Heron (University of Washington, USA)
- Contact: [pheron@phys.washington.edu](mailto:pheron@phys.washington.edu)

### GTG Mathematics in Physics Education

- Group Leader: Gesche Pospiech (Technische Universität Dresden, Germany)
- Contact: [gesche.pospiech@tu-dresden.de](mailto:gesche.pospiech@tu-dresden.de)

### GTG Physics Education Research at University (PERU)

- Group Leader: Jenaro Guisasola (University of the Basque Country, Spain)
- Contact: [jenaro.guisasola@ehu.es](mailto:jenaro.guisasola@ehu.es)

### GTG Evaluation of Learning and Instruction (ELI)

- Group Leader: Genaro Zavala, Tecnológico de Monterrey, Mexico
- Contact: [genaro.zavala@itesm.mx](mailto:genaro.zavala@itesm.mx)

### GTG Physics Preparation of Teachers in Grades K-6

- Group Leaders: Stamatis Vokos, Seattle Pacific University, USA & Federico Corni, Università degli Studi di Modena e Reggio Emilia, Italy
- Contacts: [vokos@spu.edu](mailto:vokos@spu.edu), [federico.corni@unimore.it](mailto:federico.corni@unimore.it)

### GTG Problem Solving in Physics Textbooks

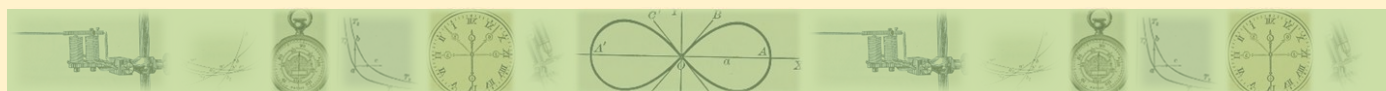
- Group Leader: Josip Slisko, Benemérita Universidad Autónoma de Puebla, Puebla, México
- Contact: [jslisko@fcfm.buap.mx](mailto:jslisko@fcfm.buap.mx)

### GTG Innovative Pedagogical Methods for University Physics

- Group Leaders: Gerald Feldman, George Washington University, USA & Guillaume Schiltz, ETH Zürich, Switzerland
- Contacts: [feldman@gwu.edu](mailto:feldman@gwu.edu), [schiltz@phys.ethz.ch](mailto:schiltz@phys.ethz.ch)

### GTG Strategies for Active Learning (SAL)

- Group Leader: Claudio Fazio, University of Palermo, Italy
- Contact: [claudio.fazio@unipa.it](mailto:claudio.fazio@unipa.it)

**GIREP THEMATIC GROUPS in GIREP-ICPE-EPEC-MPTL CONFERENCE 2019****GTG Physics Preparation of Teachers in Grades K-6**

**Symposium:** Preparing Teachers in Grades K-6 to Help Young Pupils Learn Physics: Toward a Common Research Agenda (Tuesday, July 2, 10:30-12:00)

- Organizers: F. Corni, V. Stamatis
- Discussant: P. Heron
- Contributors: M. Kapanadze, R. Lopez-Gay, A. Spyrtou, E. Vidic

**GTG on Energy**

**Symposium:** Energy in Modern Physics (Tuesday, July 2, 14:30-16:00)

- Organizer: P. Heron
- Discussant: V. Stamatis
- Contributors: L. Santi, L. Ivanijek, M. Malgieri, P. Onorato

**GTG Strategies for Active Learning (SAL)**

**Symposium:** Strategies for Active learning to Foster Student Learning and Attitudes toward Physics (Wednesday, July 3, 10:30-12:00)

- Organizer: C. Fazio
- Discussant: O.R. Battaglia
- Contributors: S. Faletic, E. McLoughlin, G. Jones, M. Giliberti

**GTG Mathematics in Physics Education**

**Symposium:** The role of mathematics in teaching modern physics at high school (Thursday, July 3, 10:30-12:00)

- Organizer: G. Pospiech
- Discussant: R. Muller
- Contributors: G. Zuccarini, A. Merzel, G. Pospiech, A. Muller

**GTG Physics Education Research at University (PERU)**

**Symposium:** Different Approaches to helping students develop conceptual understanding in University Physics (Friday, July 5, 10:30-12:00)

- Organizer: M. Kelly
- Discussant: K. Zuza
- Contributors: M. Tees, M. de Cock, L. Dvorak, M. Kelly

**GTG Innovative Pedagogical Methods for University Physics**

**Workshop:** Strategies and methods to improve Physics learning and teaching (Friday, July 5, 10:30-12:00)

- Author: G. Feldman

**New initiative – GIREP Community on Teaching/Learning Quantum Physics**

**1. Symposium:** Teaching/Learning Quantum Physics in Secondary School (Tuesday, July 5, 14:30-16:00)

- Organizer: M. Michelini
- Discussant: D. Sands
- Contributors: A. Stefanel, S. Faletic, R. Mueller, G. Pospiech

**2. Discussion Workshop** (Tuesday, July 5, 14:30-16:00)

- Organizer: M. Michelini
- Group Leaders:

Approach 1.1. Two states (polarization, spin, double wells, ...) – S. Faletic (SLO), A. Stefanel (IT), V. Stamatis (USA)

Approach 1.2. Wave function and/or Matter-wave – H. Sadaghiani (USA), E. van den Berg (NL)

Approach 1.3. Historical – L. Coletti (IT), L. Jurčić (CRO), K. Stadermann (NL)

Approach 1.4. Quantum field theory (QFT) – Marco Giliberti (IT)

Approach 1.5. Feynman path integral – M. Bondani (IT)

## REPORT ON GIREP-ICPE-EPEC-MPTL Eötvös-Year 2019 Conference - Budapest, Hungary

The GIREP-ICPE-EPEC-MPTL Eötvös-Year 2019 Conference was coinciding with the centenary year of Roland Eötvös passing away. Also the UNESCO was associated to commemorate his achievements in physics in 2019. Roland Eötvös (1848-1919) was a Hungarian physicist, who was not only an outstanding scientist – measuring the strict proportionality of the inertial and gravitational masses to a precision unprecedented before –, but was also an excellent educator and reformer of the Hungarian science education system.



The GIREP-ICPE-EPEC-MPTL Eötvös-Year 2019 Conference offered the opportunity for 318 delegates from 47 countries to come to Budapest (Hungary), from 1<sup>st</sup> -5<sup>th</sup> July 2019, to share their knowledge and experiences under the theme of “Teaching-learning contemporary physics, from research to practice”.

The international co-organizers were the following:

- the International Research Group on Physics Teaching (GIREP),
- the Physics Education Division of the European Physical Society (EPS PED),
- the Commission C14 of the International Union of Pure and Applied Physics (IUPAP)
- the Multimedia in Physics Teaching and Learning (MPTL).

The local organizers of the conference were

- the Roland Eötvös Physical Society,
- the Budapest University of Technology and Economics (BME), and
- the Institute for Computer Science and Control of the Hungarian Academy of Sciences.

The Conference was sponsored by the Hungarian Ministry of Human Capacities, the Hungarian Academy of Sciences, the Conference on Physics Education (ICPE) of the Commission C14 of the International Union of Pure and Applied Physics (IUPAP), the Paks Nuclear Power Plant, the WIGNER Research Centre for Physics, the Centre for Energy Research of the Hungarian Academy of Sciences (MTA EK), the Institute of Nuclear Techniques (INT) of the Budapest University of Technology and Economics (BME) Nuclear Training Reactor, the ELI-ALPS Research Institute (Szeged) and the Public Limited Company for Radioactive Waste Management.



The conference organizers gratefully appreciate the patronage received from the Principal patron: Prof. Dr. M. Kásler - Minister of Human Capacities and the two other patrons Prof. Dr. J. Bódis - State Secretary for Education and I. Tarlós - Mayor of Budapest.

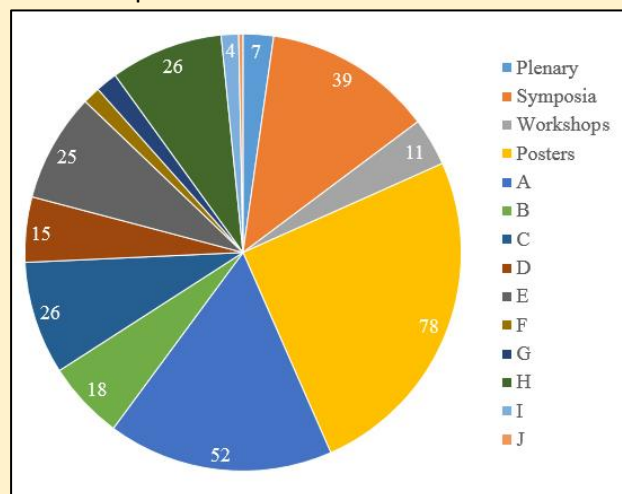
The lectures, symposia, workshops, posters, first day reception, meals were hosted at Budapest University of Technology and Economics (BME) building K.



Main auditorium

Altogether there were 173 oral presentations, 76 Posters, 11 Workshops, 10 Symposia (including a total of 39 oral presentations) and 7 plenary keynote lectures - across ten conference topics:

- A. Strategies and methods to improve physics learning and teaching
- B. Multimedia in Physics Teaching and Learning
- C. Contemporary Physics and Modern Physics in School
- D. Physics Curriculum: Development and Implementation
- E. Experiments in Physics Education
- F. Early Science Learning
- G. Environmental Physics
- H. Teacher Education and postgraduate education
- I. Informal learning and science centres
- J. Outreach of Physics



Distribution of contributions. A-J indicate only individual oral presentations.

### The scientific programme:

The conference programme is available online:

[https://docs.google.com/viewerng/viewer?url=https://girep2019.hu/wp-content/uploads/2019/05/GIREP\\_program.pdf](https://docs.google.com/viewerng/viewer?url=https://girep2019.hu/wp-content/uploads/2019/05/GIREP_program.pdf)

### The keynotes

Seven invited speakers presented their keynote lectures:

- Prof. Dr. Marisa MICHELINI (Physics Education Research Unit, University of Udine, Italy)
- Prof. Dr. Igal GALILI (The Hebrew University of Jerusalem, Israel)
- Prof. Dr. Raimund GIRWIDZ and Dr. Lars-Jochen THOMS (Ludwig-Maximilians-Universität München, Germany)
- Prof. Dr. András PATKÓS (Institute of Physics of Roland Eötvös University, Budapest)
- Prof. Dr. Manjula Devi SHARMA (School of Physics, The University of Sydney, NSW2006, Australia)
- Prof. Dr. David SOKOLOFF (Department of Physics, University of Oregon, USA)
- Prof. Dr. Dean ZOLLMAN (Kansas State University, USA)

For more information see: <https://girep2019.hu/speakers/invited-speakers/>



### GIREP Initiative: Community on Teaching/Learning Quantum Physics

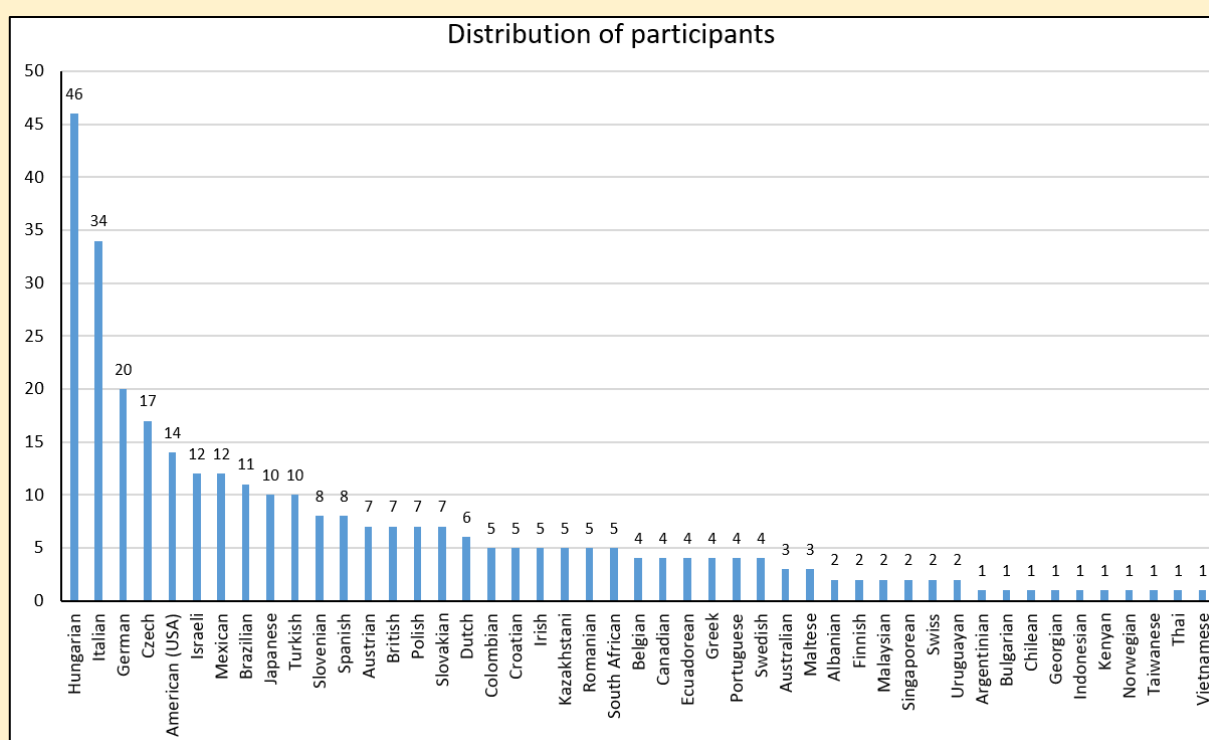
Already before the conference GIREP President Prof. Dr. Marisa MICHELINI has launched an initiative to create an international community for teaching/learning quantum physics. During the Conference several individual talks were devoted to this subject, but the main event was a Symposium dealing with this important field, followed by a Discussion Workshop. Both were led by Prof. MICHELINI. The outcomes and the results of these will be published in the publications of the Conference (in the Springer Book and/or in the Conference Proceedings published by IOP electronically).

### Medal ceremonies

The conference provided an opportunity to recognize outstanding individuals in Physics Education, therefore after some keynote lectures medal ceremonies have been introduced into the program.

- **Prof. Dr. Dean ZOLLMAN** from Center for Research and Innovation in STEM Education & Department of Physics, Kansas State University, USA received the GIREP medal for his relevant contributions in Physics Education.
- Another high recognition has been expressed to **Prof. Dr. Marisa MICHELINI** from Research Unit in Physics Education, DMIF, University of Udine, Italy. She received the 2018 IUPAP-ICPE medal.
- At the occasion of George Marx memorial celebration the GIREP Anniversary Medal has been given to **Dr. Eszter Tóth**, Hungary, as a recognition on her work done in education.
- The chair of EPS-PED Committee handed over the High School Teaching Medal in 2019 to **Prof. Jorge ANTÓNIO**, Portugal. He was nominated by the Portuguese Physical Society to appreciate his excellence in Physics Teaching.
- During the closing ceremony the PhD Student Poster Prize was given by the European Physical Society to **Julia WOITHE** from CERN, Teacher & Student Programmes, Genève, for her poster entitled: "Escape Games in Physics Education: Students' Attitudes and Flow Experience".

### Participants per country





## Scientific Visits

A new initiative has been proposed and arranged by the local organizers: the scientific visits. The participants could register to these visits previously. Special bus transports were assured to take the participants to the highly recognized research or industrial institutions and back.

Visits were organized to the following places:

- Visit 1: Paks Nuclear Power Plant (about 120 km South from Budapest, bus transport was provided)
- Visit 2: Wigner Research Centre for Physics & Center for Energy Research (these 2 scientific laboratories are in the Buda hills, a few km from the university. Bus transport was provided)
- Visit 3: Institute of Nuclear Techniques of the University & Institute for Computer Science and Control (these 2 research institutes are in walking distance from the University)
- Visit 4: ELI-ALPS Research Institute (this is an international, high-power, short-pulse laser research institution, initiative of the European Union. It is about 170 km south from Budapest. Bus transport was provided.)
- Visit 5: Low and Medium level Radioactive Waste Management Site (it is about 200 km south from Budapest. Bus transport was provided.)



About half of the participants attended one of these visits. Those who attended were impressed by this possibility to enter in such interesting places.

## The Gala Dinner

The Gala Dinner was organized on the board of the “Europa” boat on the river Danube. During the Gala Dinner the boat has made a tour on the river, and the participants had the opportunity to admire the beautiful World Heritage scenic panoramic view of Budapest.



## The Closing Ceremony

The conference was greeted by one of our patrons Prof. Dr. József BÓDIS, State Secretary for Education of Hungary, who delivered a short talk at the Closing Ceremony. He emphasized the importance of teaching physics, and expressed his appreciation that Hungary could host this very important educational conference at the occasion of the Eötvös Centenary.

At the end of the closing ceremony two symbolic “batons” were given to the organizers of the next year’s conferences: to the representatives of Hanoi and Malta.





## Acknowledgments

We would like to thank all contributors, the Invited Speakers, GIREP Committee, chairs, reviewers, local committee, volunteer physics teachers and students without whom the organization of the conference would not have been possible.

We believed that we have chosen a good venue – the Budapest University of Technology and Economics – that guarantees a successful event amid the culture and beautiful world-heritage scenery of Budapest, Hungary.

We are thankful to Prof. Dr. János JÓZSA, rector of the Budapest University of Technology and Economics for his continuous support.

On behalf of the Organising Committee:

**Beata JAROSIEVITZ (GIREP representative in Hungary) – Chair,**

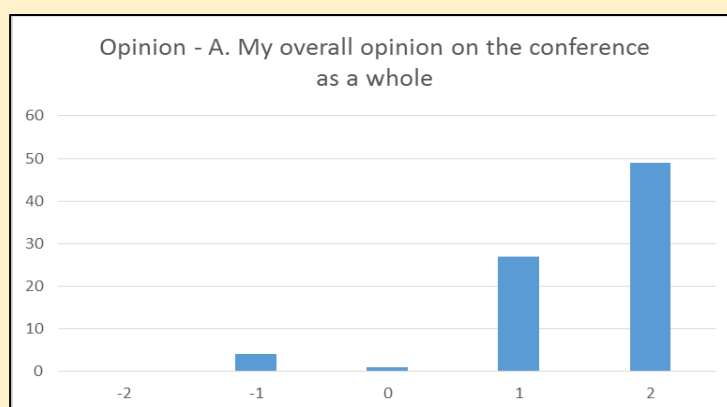
**Csaba SÜKÖSD (Roland Eötvös Physical Society board member) – Co-Chair**



Group photo of the participants in the Main Aula of the Budapest University of Technology and Economics

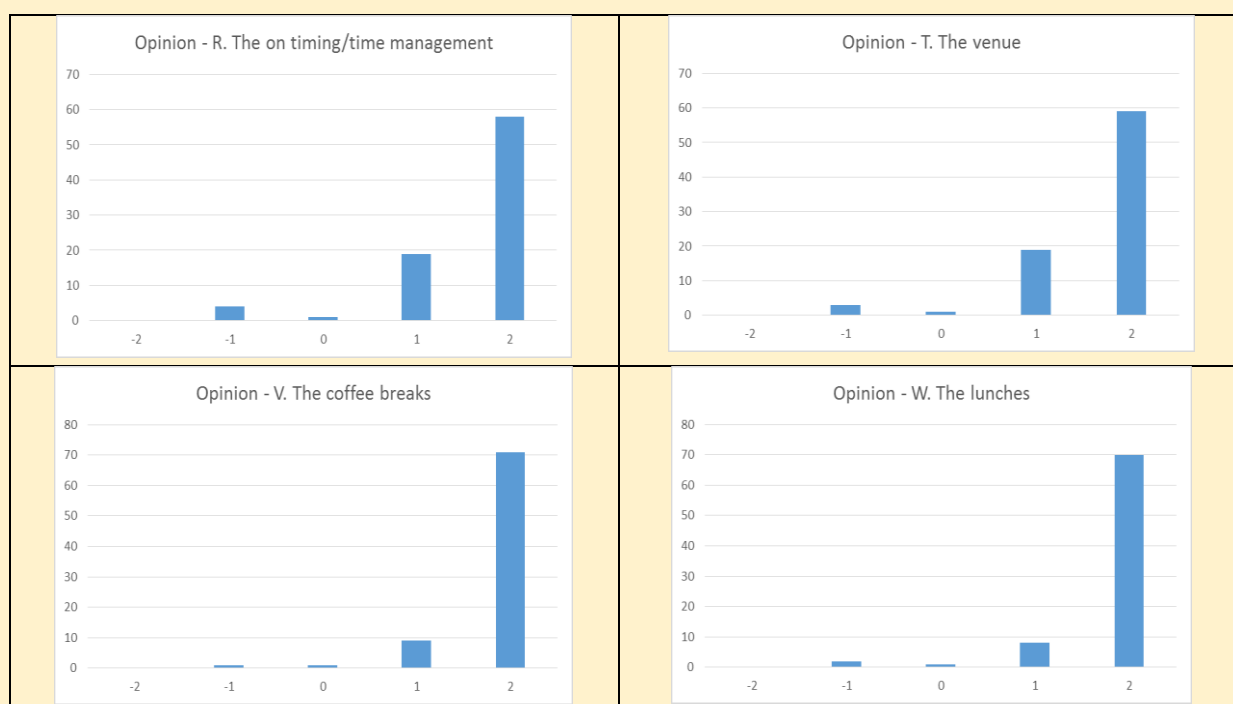
## SHORT SUMMARY OF THE FEEDBACK PROVIDED BY PARTICIPANTS OF THE GIREP-ICPE-EPEC-MPTL 2019 CONFERENCE IN BUDAPEST

The participation in the feedback was unfortunately not really satisfactory in spite of the several reminders. Out of the 318 participants, only 83 people ( $\approx 26\%$ ) filled in the online feedback form. However, it is a reason for some satisfaction for all people involved in the organization, that 49 participants out of these 83 considered the conference as a whole “very good, convincing, very learning full, satisfactory, interesting, high quality” and 27 “good, acceptable, rather learning full, good quality but a few things bother me”. Only very few people who uploaded their feedback form were more negative (see the figure).



The opinions on the keynotes varied more, always having at least 20% “no opinion, not applicable, not positive, not negative”, and the rest between slightly positive to really positive. There is surely some part in those 20% who could not be present at the keynote talk for any reason, therefore the question for them was “not applicable”. These latter do not represent a real judgement on the quality of the talk.

There are improvements possible with respect to the poster sessions, the comments below indicate some ideas. All contact activities (breaks, lunches,...) and the organization as such (e.g. timing), as well as the venue got very high scores (see figures below).



More than 120 comments show the engagement of people giving feedback. Many interesting changes and adaptations were suggested, not necessarily to be taken as a critic but – if possible – as an added value. Working more paperless (program, abstract book) is maybe feasible in the near future, but a paper map of the venue and a paper overview of the program would still be helpful. Another issue are the parallel sessions: some ask to have in parallel subjects that are distinct, and to keep connected subjects “in series”, not to miss the favourite presentations. It is also clear that poster sessions are considered important, with some changes on the format were suggested, but also that the location should be very accessible, for example near the coffee break zone. Another thread that could be seen is more attention for the teachers (more sessions led by teachers, more on education than pure physics, more topics applicable in the classroom). Another wish is to have more young people on the stage... and to have more time for discussion during and after sessions.

## THE 3<sup>RD</sup> WORLD CONFERENCE ON PHYSICS EDUCATION

The World Conference on Physics Education (WCPE) was initiated by Groupe International de Recherche sur l'Enseignement de la Physique (GIREP) and the International Commission on Physics Education (ICPE) – Commission 14 of the International Union for Pure and Applied Physics (IUPAP). WCPE is structured to share recent research and practices on physics education as well as help foster collaborations on physics education research and development which can transcend national boundaries. The goal will be reached through various sessions which will develop actions plans that strengthen the teaching and learning of physics at all levels and in many countries.



### 3<sup>RD</sup> WORLD CONFERENCE ON PHYSICS EDUCATION

#### Innovating Physics Education: From Teacher Education To School Practices

🕒 20 – 24, July, 2020

📍 Hanoi National University of Education, Vietnam



🌐 [wcpe2020.hnue.edu.vn](http://wcpe2020.hnue.edu.vn)

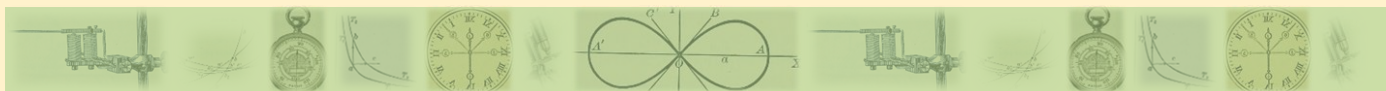
✉ [wcpe2020@gmail.com](mailto:wcpe2020@gmail.com)

📘 <https://www.facebook.com/WCPE2020/>



After the successful WCPE 2012 in Istanbul and WCPE 2016 in São Paulo, the 3rd WCPE 2020 in Hanoi will be a concrete step forward in global cooperation. The 3rd WCPE theme is “Innovating physics education: From teacher education to school practices”. The conference topics are globally significant, also of significant interest in Vietnam where the school physics curriculum has undergone fundamental and comprehensive innovation. This is a shift away from mainly content-based to more competence-based education, especially more use of laboratory and ICT for inquiry-based physics education. Indeed, given these changes, Vietnamese physics teachers, teacher educators and physics-education researchers will benefit very much from participating in WCPE 2020 with colleagues from all over the world.

Envisaged as a series of conferences with a four-year periodicity, WCPE would be a working conference with follow-up actions that presumably would carry over to the following conference. Vision of WCPE 2020 is, therefore, to follow a global participative process before, during and after the conference.



### Message from HNUE President

Hanoi National University of Education (HNUE) has its origins dated back to as early as 1945 when President Ho Chi Minh ordered the formation of the Philology University Committee. The University was officially established on 11 October 1951 with its tasks to train teachers of different levels.

For over 65 years since, HNUE has been a popular destination of teaching and scientific research activities which attracts scholars, lecturers and students from all over Vietnam and overseas. Currently, HNUE has 25 faculties and departments, 50 centers and institutes. HNUE is now promoting undergraduate programs in English at 7 faculties, namely Mathematics and Informatics, Physics, Chemistry, Biology, Early Childhood Education, Primary Education, and Information Technology. HNUE is committed to nurture and educate each and every student to become a responsible and resourceful teacher or researcher towards building a nation of knowledge and humanity. We are committed to create an equal opportunity for all students, regardless of their differences and background, to reach out and realize their potential, their dream. We are striving to be an active facilitator in the country's modernization and development in the 21st century and beyond. HNUE endeavors to pursue tie-ups with reputable international educational and social organizations with the objective of cultivating mutually beneficial partnerships. Through memoranda of understanding and agreements, the University's network of collaborations spans the globe.

The linkages with our valued partners in more than 40 countries creates a great many opportunities for dynamic and fruitful exchanges of intellectual knowledge and collaborative teaching and scientific research activities, which ultimately contributes to raising the quality of teacher training.

I look forward to welcoming you at Hanoi National University of Education,

**Professor Nguyen Van Minh**

President of Hanoi National University of Education

### REPORT ON EUROPEAN QUANTUM FLAGSHIP EVENT, HELSINKI, 17-18 OCTOBER 2019

On October 17-18th, over 250 European quantum experts gathered in Helsinki to discuss the present and future of quantum technologies. Helsinki hosted the Finnish Presidency – Quantum Flagship “Exploring and Making Quantum Technology” event, which gathered over 250 quantum experts from all over Europe to discuss the current landscape of the quantum technologies' ecosystem in Europe.

Organised by the Finnish Presidency, Aalto University, VTT Technical Research Centre of Finland, the Academy of Finland, the Quantum Flagship, and supported by the European Commission, the two-day event became the ideal scenario for the scientific community, industry representatives as well as policymakers to come together to view the current status and progress of quantum technologies within Europe and define the next steps and strategic goals for the advancement of these technologies in the region.

The participants filled the conference room the first day to hear about various of the accomplishments attained so far in the field by the European quantum community as well as to learn about the initiatives in the field at a Finnish level. They also had the chance to have insights on the strategic approach that the European Commission is planning to put into motion in the Quantum Technology field in the period 2021-2027. This is articulated around 4 major pillars of activity, addressing: research and technology development in the Quantum Flagship priority areas, large-scale infrastructure investments in quantum communications and computing, building a competitive quantum industry and skilled workforce, and international cooperation.



As the closing session of the day, a panel discussion took place on policy issues and infrastructures concerning the future roll out of quantum technologies both in the European Union and in the different Member States with representations from Austria Finland, France, Germany, Slovakia, and the Netherlands:

- Khalil Rouhana – Deputy Director General, DG Connect (European Commission)
- Michael Wiesmüller – Head of Department / Key Enabling Technologies for Industrial Innovation, Austrian Federal Ministry of Transport, Innovation and Technology (BMVIT) (Austria)
- Paul Indelicato – Senior Researcher at CNRS and Research Advisor of the Conference of the University President (France)
- Antti Vasara President & CEO, Technical Research Centre of Finland (VTT) (Finland)
- Herbert Zeisel – Deputy Director General “Research for Digital Transformation and Innovation”, Federal Ministry of Education and Research (BMBF) (Germany)
- Ambassador Milos Koterec – Innovation Counsellor at the Slovakia embassy in Helsinki (Slovakia)
- Rogier Verberk – Chair of the Quantum Flagship Innovation Working Group and Director Semiconductor Equipment at TNO (The Netherlands)

The panellists gave their opinions on the development of quantum technologies within the region and emphasized the importance of joining forces to create one strong European ecosystem that would make a difference and allow the region to compete at an international level.

The second day focused on a more scientific agenda, bringing to the stage different European and international experts, who together with the audience debated and discussed on the current status of areas such as international cooperation, infrastructures, engineering, intellectual property and education. They also brought to discussion proposed future commitments, initiatives, as well as challenges that need to be overcome in order to boost the development of these technologies to start transferring them to the market in the near future.

One of the highlights of this second day was the panel discussion on International Cooperation with representatives from Europe, United States and Japan. The panel members talked about the progress that is being carried out and achieved in each of these regions within quantum technologies and addressed different issues, such as the sharing of infrastructures, creating international innovation hubs in each area that can attract foreign talent and investments, as well as foreseeing future collaborations for the joint development of fabrication processes, training and education opportunities at an international level to broaden expertise. Panel members included the following renowned speakers:

- Elisabeth Giacobino (Research Emerite at CNRS and member of the Quantum Flagship Strategic Advisory Board- SAB)
- Jake Taylor (Assistant Director for Quantum Information Science at the White House Office of Science and Technology Policy, USA; and Interim Director, National Quantum Coordination Office, USA),
- Kenji Ohmori (Vice Chair and Head of Expert Members, Committee for Quantum Science and Technology Policy, Ministry of Education, Culture, Sports, Science and Technology (MEXT) of Japan; Professor and Chairman, Institute for Molecular Science, National Institutes of Natural Sciences, Japan),
- Gustav Kalbe (Head of the High Performance Computing and Quantum Technology unit from the European Commission).

Pascal Maillot, Deputy Head of the Unit High Performance Computing & Quantum Technology from the European Commission, gave the closing remarks of the “Exploring and Making Quantum Technology” event, emphasizing the importance of the creation of the Quantum Flagship and stating that quantum is a high priority for the new to-be established Commission.



## ANNOUNCEMENT: Fellowship: S’Cool LAB MANAGER, GENEVA, SWITZERLAND

At CERN, the European Organization for Nuclear Research, physicists and engineers are probing the fundamental structure of the universe. Using the world's largest and most complex scientific instruments, they study the basic constituents of matter - fundamental particles that are made to collide together at close to the speed of light. The process gives physicists clues about how particles interact, and provides insights into the fundamental laws of nature. Find out more on <http://home.cern>

Education has been an integral part of CERN's mission since its foundation and is an established goal of the Organization.

S’Cool LAB is a Physics Education Research facility at CERN, the European Organization for Nuclear Research in Geneva, Switzerland. S’Cool LAB offers high school students and their teachers from around the world the chance to take part in hands-on & minds-on particle physics experiment sessions on-site at CERN. In addition, S’Cool LAB drives the development of low-cost hands-on learning activities to support teachers in their challenging endeavour of introducing particle physics into their classrooms.

As S’Cool LAB manager, you will manage all existing programmes and activities with approx. 8000 participants per year and you will have the opportunity to develop future activities and shape future programmes together with a team of Doctoral students, administrative and technical support. You will be part of the Teacher & Student Programmes Section at CERN starting on 1 July 2020 and collaborate closely with other teams within the Education, Communication, and Outreach group.

In particular, you will have several organisational and Physics Education Content & Research tasks while also contributing to other activities within the Education, Communication, and Outreach group at CERN.

All applications should normally reach us no later than 2 March 2020 at noon (12.00 PM CEST). More info:

<https://jobs.smartrecruiters.com/CERN/743999704385211-fellowship-s-cool-lab-manager?trid=3320305b-0f5f-4245-a3a4-e2e46bc46590>



## FUTURE CONFERENCES



### ESOF (EuroScience Open Forum) 2020

The Forum will be organized in Trieste, 5-9 July 2020:

<https://www.esof.eu/en/programmes/science-in-the-city-festival.html>

### AAPT Summer Meeting

The Conference will be organized in Grand Rapids, Michigan, USA, 18-22 July 2020: <https://www.aapt.org/Conferences/>

### 3<sup>rd</sup> World Conference in Physics Education 2020

#### *From teacher Education to School Practices*

The Conference will be organized in Hanoi, Vietnam, 20-24 July 2020:

<http://wcpe2020.hnue.edu.vn/>

### GIREP-EPS-MPTL Seminar in Malta

The conference will be organized in Malta, 16-20 November 2020

## GIREP MEMBERSHIP RENEWAL & FEES

We would like to remind you that you can pay your GIREP membership fee (30 euro per year) either by bank transfer or via PayPal. Both possibilities are described in detail on the GIREP web page: <https://girep.org/information.html> available from the menu item "Info & Contact" on GIREP web pages.

After a login, you can also visit the page: [https://girep.org/member/membership\\_fees.html](https://girep.org/member/membership_fees.html) (available simply from the menu, too). You can see your membership fee payment history there. At that page, there is also a possibility to pay your GIREP membership fee using your credit card via PayPal (though this is slightly more costly than sending the fee to GIREP as "a friend" via PayPal).

Please, be aware that the address of the bank of the GIREP account is: Heuvelstraat 56, 2530 Boecheut. The account number will stay the same. The information on GIREP webpage will be updated in due time.

Last but not least: It should be reminded that according the GIREP Statutes, Art.6, §5: "Members not paying their yearly fee before the 1st of July of the current year are no longer considered as members." So, please, be so kind and pay your membership fee in time.

*Leos Dvorak, GIREP Treasurer*

## CALL FOR CONTRIBUTIONS TO THE GIREP NEWSLETTER

We would like to encourage all GIREP newsletter readers to participate in sharing news and ideas about physics teaching and learning and physics education research. Please, send contributions for the next GIREP Newsletter to GIREP Secretary, Eilish McLoughlin [Eilish.mcloughlin@dcu.ie](mailto:Eilish.mcloughlin@dcu.ie) before the 30th of April 2020.



### Benefits for GIREP vzw Members

As a GIREP member you have **exclusive access** to the digital proceedings of the past GIREP conferences. In addition you can get a **reduced registration fee** for GIREP conferences and for conferences of our partner organisations (see GIREP Newsletter 54). Starting from 2018, GIREP members get also **free-access codes to GIREP books** published by Springer.