



GIREP Newsletter

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EDITOR'S SECTION

Dear Colleagues,

Just before the GIREP-ICPE-EPEC-MPTL Conference 2019 in Budapest we issue this Newsletter with some information on activities, reports and plans related to the GIREP as a Community and GIREP vzw as a legal organization. In particular we would like to announce the GIREP vzw General Assembly in July and publishing the GIREP vzw Annual Report and Auditor's Report for 2018. We inform you in details about activities during GIREP-ICPE-EPEC-MPTL Conference 2019 and new GIREP initiatives – Community of Quantum Physics Teaching and Learning as well as Early Career Community for young researchers in GIREP. We report also on the current status of the GIREP latest and future publications and GIREP presence at other conferences in 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 15th of November, 2019.

We wish you wonderful holidays, hoping to meet you all in Budapest!

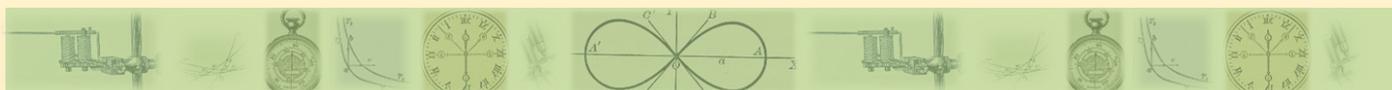
Dagmara Sokółowska

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

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Abbreviated key title: GIREP newsl



GIREP COMMITTEE ACTIVITIES

GIREP Committee members, elected in 2016, are:

- **President of GIREP, Marisa Michelini**, University of Udine, Italy
- **Vice-President of GIREP in charge of activities aimed at universities and research, Claudia Haagen-Schützenhöfer**, University of Graz, Austria
- **Vice-President of GIREP in charge of activities aimed at teachers, Wim Peeters**, PONTOn vzw, Flanders, Belgium
- **GIREP Secretary, Dagmara Sokołowska**, Jagiellonian University, Krakow, Poland
- **GIREP Treasurer, Leoš Dvořák**, Charles University in Prague, Czech republic

The **GIREP Auditor** is **Ton Ellermeijer** from Foundation CMA, Amsterdam, Netherlands

Since the last Newsletter No. 60, published in December 2018 the GIREP Committee (GC) took part in four Skype meetings.

During the last five months the work of the GC has focused on:

- Practicalities in relation to legal status of GIREP vzw (e.g. the Annual Report for 2018, including financial report and its approval by the Auditor)
- Development of GIREP Thematic Groups and their contribution to GIREP-ICPE-EPEC-MPTL Conference 2019 in Budapest
- Issues related to the content and organization of the GIREP-ICPE-EPEC-MPTL Conference 2019 in Budapest
- Organization of the GIREP General Assembly 2019
- Proposals for organization of the future GIREP seminars and conferences (Malta 2020)
- Organization of 3rd WCPE in Vietnam
- GIREP 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
- GIREP web site and newsletter

CHANGES IN THE GIREP VZW COMMITTEE

We would like to announce that starting from the 15th of May 2019 the GIREP vzw Vice-President, Prof. Claudia Haagen-Schützenhöfer, resigned from her role in the GIREP vzw Committee due to professional reasons. She will remain member of the GIREP Committee until the end of the GIREP-ICPE-EPEC-MPTL Conference 2019, i.e. until the 5th of July 2019. GIREP vzw Committee expresses its gratitude to Claudia Haagen-Schützenhöfer for her service as a Committee member since year 2010.

The GIREP vzw Committee invited Prof. Gesche Pospiech from Technische Universität Dresden, Germany to become a member of the GIREP vzw Committee until the end of the current term of the GIREP vzw Committee (in accordance with the GIREP vzw Statutes, art. 8, §2 and §6). Prof. Gesche Pospiech accepted the invitation starting from the 15th of May 2019.

Redistribution of the tasks among the GIREP vzw Committee members will take place in July 2019.

GIREP GENERAL ASSEMBLY 2019

We would like to inform the GIREP vzw Members and Sympathizers that the GIREP vzw General Assembly 2019 will be 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 4th 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.

This year an on-line participation in the General Assembly will not be available due to technical reasons.

Prof. Marisa Michelini
(GIREP President)

During the General Assembly the Annual GIREP vzw Report will be presented. The report consists of three parts, available via the following links:

- The GIREP vzw Annual Report:
http://girep.org/media/2018_GIREP_vzw_Annual_Report.pdf
- The GIREP vzw Financial Report 2018, available at that time at:
http://girep.org/media/2018_GIREP_Financial_report.pdf
- The Audit Report of the GIREP vzw Financial Report in year 2018:
http://girep.org/media/2018_GIREP_Report_audit.pdf

LAUNCH OF THE GIREP COMMUNITY ON TEACHING/LEARNING QUANTUM PHYSICS

On the 25th of January, Prof. Marisa Michelini started her initiative to create in GIREP a Community on Teaching/Learning Quantum Physics, addressing her letter for contributions to the GIREP-ICPE-EPEC-MPLT Conference 2019 to the participants working on such topic. The idea was to gather persons interested in such initiative, who could contribute already this year to the discussion on the topic at least with a poster that could be presented at the conference in Budapest.

The response from the Conference participants went beyond any expectations in a short time of less than a month – 45 persons submitted their contributions to the Conference and applied to the community, sending their responses to the questionnaire prepared by Prof. Marisa Michelini and giving their suggestions for topics and format of the community work and discussions.

In return Prof. Marisa Michelini sent in April 2019 the report and the invitation, still valid for further development of the Community.

GIREP COMMUNITY ON TEACHING/LEARNING QUANTUM PHYSICS

To the GIREP members and sympathizers

GIREP is working on improving even more the quality of Teaching and Learning Physics with different initiatives with the goal to support the production of research results, studies and in general teaching proposals based on Physics Education Research (PER). Contributing to this goal are the excellent Conferences and Seminars organized more and more in collaboration with other bodies, the very active and qualified GTGs (GIREP Thematic Groups) instituted in the last years and the contracts with the Springer and IOP for Scopus / Web of Science indexed ISI books of selected papers. Content research, design based research and integration of research with practice is characterizing the GIREP members and sympathizers.

Teaching / Learning modern and contemporary physics is the main topic of the Budapest Conference in July 2019. GIREP have the dream to contribute in creating a community on Teaching / Learning Quantum Physics, starting from Budapest Conference.

We believe that the first step is the identification of those who have worked in this field and are available for discussions on that topic.

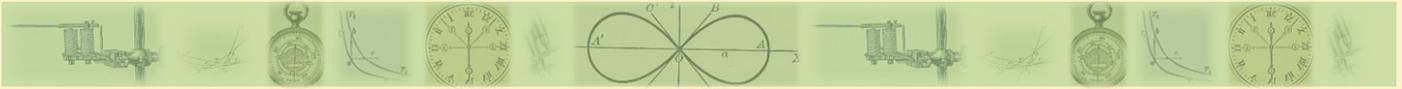
We have sent a letter on 25 January 2019 inviting interested colleagues to fill in a FORM to express their specific interest in working on this field.

We received 45 applications including references and very interesting suggestions.

In the meantime the European Quantum Flagship Group (EQFG) organized a meeting in Grenoble, where a session was devoted to Quantum Education. This is thanks to Oxana Mishina who motivated EQFG for that goal and created a little scientific Board for that scope, composed by Rainer Mueller, me and herself. The GIREP Community on Teaching Quantum Physics includes this scientific board, so the connection between GIREP and EQFG-Physics Education is born.

In Budapest Conference three Symposia (S5, S7, S8) are focused on modern physics Teaching/Learning, on the role of math in quantum physics and on Teaching / Learning Quantum Physics. Beside them several different contributions in oral or poster presentations are showing results in this field. Symposia and contributions will play the role of introduction to the discussions of GIREP Community on Teaching /Learning Quantum Physics.

Many thanks should go to the colleagues sending contributions, suggestions and accepting to help as volunteers. As promised, after the S8 on Tuesday (2nd July), from 16:30-18:00, we organize a "Discussion Workshop (DW)" with the following goals:



- 1) Build a working community like a GTG or a similar structure;
- 2) Draw up a scientific position paper on T/L Quantum Physics that serves to guide projects and teaching activities on these topics, also for EQFG-Physics Education.
- 3) Prepare a book of selected papers on PER for T/L Quantum Physics in secondary school.

The 90 minutes' session of the DW will be organized as follows

- Introduction (10 min)
- Group work on the same aspects in 5 approaches (30 min)
- Presentation of the discussions in groups (5 min x 6 groups)
- Plenary discussion and conclusions (20 min)

Appendix 1 here contains the suggested questions to treat in each approach considered. Sergej Faletic, Marco Giliberti, Alberto Stefanel and me worked to prepare this proposal.

Please consider to prepare your contribution to the discussion group in advance to facilitate the discussion during the meeting.

To collect your answers and comments, we have prepared a FORM at the following page <https://bit.ly/2GojhYy>

Please let us know (marisa.michelini@uniud.it) about the participation/interest in the Community work and in the Discussion Workshop (DW) in Budapest.

Thank you in advance for your cooperation.

Best wishes

Marisa Michelini

APPENDIX 1

Proposals for the GIREP DW T/L Quantum Physics

(Sergej Faletic, Marco Giliberti, Marisa Michelini, Alberto Stefanel)

GOALS OF THE DISCUSSION WORKSHOP

To write a position paper to submit to GIREP Assembly on QM T/L in high schools and non-physics major courses at University level (mathematics, engineering, bio-area, informatics).

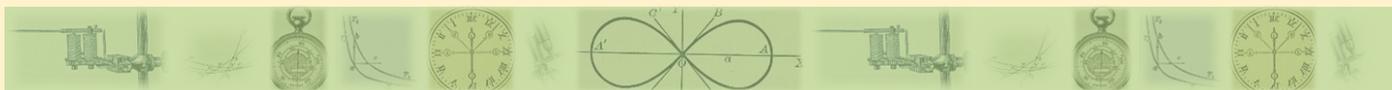
All groups should discuss the topics listed in point 2 within the framework of a specific approach in list 1:

1. Approaches: each group will select one of the following approaches:

- 1.1. Two states (polarization, spin, double wells, ...)
- 1.2. Wave function and/or Matter-wave
- 1.3. Historical
- 1.4. Quantum field theory (QFT)
- 1.5. Feynman path integral

2. How should each of the following topics be taught within the approach selected?

- 2.1. Properties/eigenvalues
- 2.2. Probability
- 2.3. States
- 2.4. Superposition
- 2.5. Trajectory/Which way
- 2.6. Duality
- 2.7. Uncertainty relations/incompatibility
- 2.8. Schrödinger equation



- 2.9. Entanglement
- 2.10. Non-locality
- 2.11. Teleportation
- 2.12. Q computing
- 2.13. Should we do formalism or not?
- 2.13.1. Which formalism to choose (Hilbert space, wave function, matrix)?
- 2.14. Interpretations (Copenhagen, Bohm, Dirac, ...)
- 2.15. Should history be included or can we teach only the content?
- 2.15.1. Which history should be included?
- 2.16. Contexts (polarization, spin, potential wells)
- 2.17. Applications (laser, LED, semiconductors, ...)
- 2.18. Modularity in a coherent approach:
- 2.18.1. Can the course be split in modules on different topics so that the teacher can choose only one module in a limited amount of time?
- 2.18.2. Can the same approach be used for all modules and how?

3. How to teach

- 3.1. How to motivate students to QM?
- 3.2. How much time should be allocated in total to QM?
- 3.3. Adopt a single approach and interpretation or more, and motivations
- 3.4. Should we emphasize contrast or the similarity with classical physics (CPh)?
- 3.5. Formalism and interplay with math
- 3.5.1. Should we use math formalism and how in depth?
- 3.5.2. Should math be presented as having a conceptual role?
- 3.5.3. What math do teachers know? What can they use to teach QM?
- 3.5.4. Which formalism to choose? Dirac, wave function, multiple?
- 3.5.5. Teach additional math to the students (matrices, algebra)?
- 3.6. Which experiments can be done?
- 3.7. How to include experiences, applications?
- 3.8. Assessment
- 3.8.1. What type of assessment to use? Produce a universal questionnaire?
- 3.8.2. What problems to use?

MODULES: hypothesis of modules for internal discussion:

- A. Measurement, probability, states, properties, superposition, collapse, [incompatibility]
- B. Wave description, non-locality, collapse, superposition, motion, incompatibility, trajectory
- C. Potential barriers, transmission, reflection, tunneling, motion
- D. Entanglement, non-locality, teleportation, include quantum technology and the so called QM 2.0: quantum computing?
- E. QFT: what topics can be treated from a unified QFT point of view and how?
- F. Interpretations, history, philosophy; specifically what is the added value of studying these?

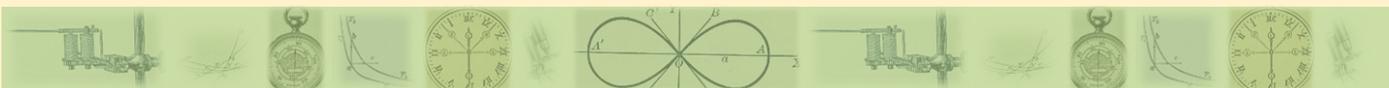
The following very important aspects will be discussed in next GIREP Community meeting (Malta, November 2020):

4. Teacher Preparation

- 4.1. Who teaches physics at the target levels? Can we reach them? What do they know?
- 4.2. Can we provide in-service training?
- 4.3. Ask teachers what they would need.

5. Resources

- 5.1. QPER data
- 5.2. Didactical resources for teachers and students
- 5.3. Experiments
- 5.4. Simulations



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

GTG Mathematics in Physics Education

- Group Leader: Gesche Pospiech (Technische Universität Dresden, Germany)
- Contact: 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

GTG Evaluation of Learning and Instruction (ELI)

- Group Leader: Genaro Zavala, Tecnológico de Monterrey, Mexico
- Contact: 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, federico.corni@unimore.it

GTG Problem Solving in Physics Textbooks

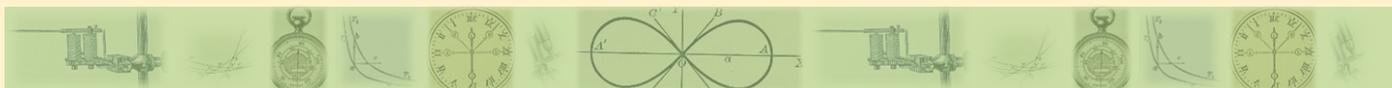
- Group Leader: Josip Slisko, Benemérita Universidad Autónoma de Puebla, Puebla, México
- Contact: jslisko@fcfm.buap.mx

GTG Innovative Pedagogical Methods for University Physics

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

GTG Strategies for Active Learning (SAL)

- Group Leader: Claudio Fazio, University of Palermo, Italy
- Contact: 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)

GIREP-ICPE-EPEC-MPTL CONFERENCE 2019 IN BUDAPEST – AN OVERVIEW



The conference is organized by:

- Groupe International de Recherche sur l'Enseignement de la Physique (GIREP)
- International Commission on Physics Education (ICPE)
- European Physical Society - Physics Education Division (EPS PED)
- Multimedia in Physics Teaching and Learning (MPTL)

together with

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

It is endorsed by:

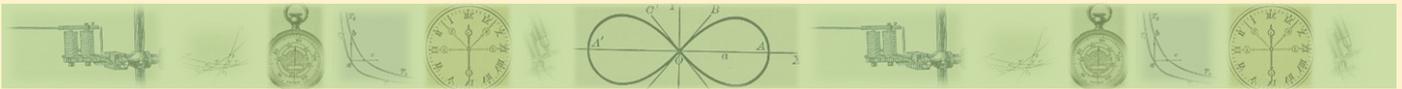
- International Commission on Physics Education (ICPE) of the Commission 14 of the International Union for Pure and Applied Physics (IUPAP)

The main topics of the conference are the following:

- Strategies and methods to improve Physics learning and teaching
- Multimedia in Physics Teaching and Learning
- Contemporary Physics and Modern Physics in School
- Physics Curriculum: Development and Implementation
- Experiments in Physics Education
- Early Science Learning
- Environmental Physics
- Teacher Education and postgraduate education
- Informal learning and science centers
- Outreach of Physics

Invited Speakers:

- Prof. Dr. Marisa Michelini, Research Unit in Physics Education, DMIF, University of Udine, Italy
Keynote Lecture: *Modern Physics in Secondary School and Physics Education Research*
- Prof. Dr. Igal Galili, The Hebrew University of Jerusalem, Israel
Keynote Lecture: *The impact of Equivalence Principle on physics teaching – The ongoing opposition in teaching of Weight-Gravity*
- Prof. Dr. Raimund Girwidz, Physics Education at Ludwig-Maximilians-Universität München, Germany
Keynote Lecture: *Physics Teaching and Learning with Multimedia Applications in Non-English Teacher-Oriented Journals*
- Prof. Dr. András Patkos, Institute of Physics, Eötvös University, Budapest, Hungary
Keynote Lecture: *Scientist, educator, statesman – legacy of Roland Eötvös*
- Prof. Dr. Manjula Devi Sharma, School of Physics, The University of Sydney, Australia
Keynote Lecture: *Experimentation in physics education: Should we bother?*
- Prof. Dr. David Sokoloff, Department of Physics, University of Oregon, USA
Keynote Lecture: *Active Dissemination: Three Decades of Faculty Development in Active Learning*
- Dr. Lars-Johan Thoms, Physics Education at Ludwig-Maximilians-Universität München, Germany
Keynote Lecture: *Facilitating Knowledge Acquisition in Virtual and Remote Labs*
- Prof. Dr. Dean Zollman, Center for Research and Innovation in STEM Education & Department of Physics, Kansas State University, USA
Keynote Lecture: *Context, Representations and Transfer: How Physics Education Research Informs Teaching and Learning*

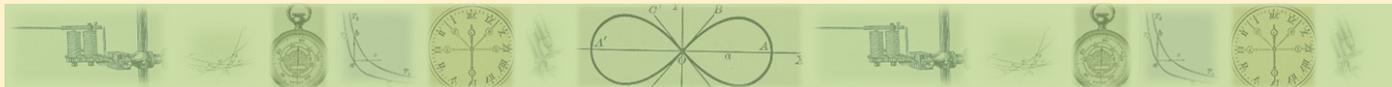


Program Outline

	Monday (1 st July)	Tuesday (2 nd July)	Wednesday (3 rd July)	Thursday (4 th July)	Friday (5 th July)
8:00 - 8:30	Registration opens (08:00 - 10:00)	Registration opens	Registration opens	Registration opens	Registration opens
8:30 - 9:00					
9:00 - 9:30					
9:30 - 10:00		Plen03 (09:00 - 10:00) PROF. DR. IGAI GALILI Room: KFS1 AUD MAX Chairperson: Csaba SÉKÖSD	Plen05 (09:00 - 10:00) PROF. DR. DAVID SOKOLOFF Room: KFS1 AUD MAX Chairperson: Dagnana SOKOLOWSKA	Plen06 (09:00 - 10:00) PROF. DR. RAIMUND GIRWIDZ, DR. LARS-JÖCHEN THOMS Room: KFS1 AUD MAX Chairperson: Tom ELLERMEIJER	Plen 07 (09:00 - 10:00) PROF. DR. MANJULA DEVI SHARMA Room: KFS1 AUD MAX Chairperson: Roberto NARDI
10:00 - 10:30	Opening ceremony (10:00 - 11:00) KFS1 AUD MAX	Coffee break (10:00 - 10:30)	Coffee break (10:00 - 10:30)	Coffee break (10:00 - 10:30)	Coffee break (10:00 - 10:30)
10:30 - 11:00		Parallel sessions (10:30 - 12:00)	Parallel sessions (10:30 - 12:00)	Parallel sessions (10:30 - 12:00)	Parallel sessions (10:30 - 12:00)
11:00 - 11:30	11:10 - 11:30 George Marx memorial KFS1 AUD MAX	S1 S2 W01 A01 A02 A03 D01 H02 KFS2 KFS1 KFS1 KFS3 K134 K193/95 K174 KFS8	S6 W04 A06 B01 B02 E01 E02 F01 KFS2 KFS1 KFS1 K134 K193/95 K174 KFS3 KFS8	S7 W03 B03 C01 C02 E04 E03 H05 KFS1 KFS1 KFS2 KFS3 K134 K193/95 K174 KFS8	S10 W09 A12 C06 W10 W11 E06 KFS1 KFS2 KFS1 KFS3 K193/95 K134 K174
11:30 - 12:00	George Marx memorial walk (11:30 - 12:00)				
12:00 - 12:30	Lunch (12:00 - 13:00)	Group photo (12:00 - 12:10) in front of the building K, main entrance Lunch (12:10 - 13:00)	Lunch (12:00 - 13:00)	Lunch (12:00 - 13:00)	Lunch (12:00 - 13:00)
12:30 - 13:00					
13:00 - 13:30	Plen01 (13:00 - 14:00) PROF. DR. MARISA MICHELINI Room: KFS1 AUD MAX Chairperson: Csaba SÉKÖSD	Plen04 (13:00 - 14:00) PROF. DR. DEAN ZOLLMAN Room: KFS1 AUD MAX Chairperson: Marisa MICHELINI	Prepare for visits, go to buses (gardens) Buses are leaving at 13.30 visits	Parallel sessions (13:00 - 14:30)	Closing ceremony (13:00 - 14:00) Room: KFS1 AUD MAX
13:30 - 14:00				S4 W06 B04 W07 H03 C03 G01 H04 KFS1 KFS1 KFS2 K193/95 K134 KFS3 K174 KFS8	
14:00 - 14:30	Coffee break (14:00 - 14:30)	Coffee break (14:00 - 14:30)		Coffee break (14:30 - 15:00)	Buses are leaving at 14:00 Optional excursions
14:30 - 15:00	Plen02 (14:30 - 16:30) PROF. ANDRÁS PATKÓS Room: KFS1 AUD MAX Chairperson: David SANDS	Parallel sessions (14:30 - 16:00)			
15:00 - 15:30		S3 S8 W02 A04 A05 A07 D02 D03 KFS2 KFS1 KFS1 KFS1 K134 K193/95 K174 KFS8	15-18 GC meeting K193/95	Parallel sessions (15:00 - 16:30)	15-18 IUPAP meeting (SKYPE) Room: KFS1 AUD MAX
15:30 - 16:00	Coffee break (15:30 - 16:00)			S9 W08 C04 C05 D04 I01 E05 H06 KFS1 KFS2 KFS1 KFS3 K193/95 KFS8 K174 K134	15-18 GC meeting K193/95
16:00 - 16:30	GIREP meeting (16:00-17:00) KFS1	GTG leaders meeting (16:00-17:00) K193/95			
16:30 - 17:00		Poster session (16:00-17:00) KFS1		GIREP General Assembly (16:30 - 17:30) Room: KFS1 AUD MAX	
17:00 - 17:30	Meeting with editors Round table (17:00 - 19:00) KFS1				
17:30 - 18:00		Parallel sessions (16:30 - 18:00)		Free time (17:30 - 18:20)	
18:00 - 18:30		S5 DW W05 A11 A08 A09 A10 H01 KFS2 KFS1 KFS1 KFS3 K134 K193/95 K174 KFS8			
18:30 - 19:00		Refreshment Break (18:00 - 18:30)			Free time
19:00 - 20:00	Welcome reception (19:00 - 21:00) MAIN AULA	Poster session (18:30 - 20:30)	(18:30 - 20:30) Meeting of coop. bodies with GIREP Room: KFS1 AUD MAX		IUPAP dinner from: 19
20:00 - 20:30				Conference dinner (19:00 - 22:00) Boat Europe Group of delegates can leave from the university together, accompanied by local teachers. Leaving time: 18:45	GC dinner from: 19
20:30 - 21:00		Free Evening from: 20:30	Free Evening		

Special Meetings:

- GTG Leaders Meeting (Monday, July, 1, 16:00-17:00)
- Meeting with Editors – Round Table (Monday, July, 1, 17:00-19:00)
- Meeting of Cooperating Organizations with GIREP (Tuesday, July, 2, 18:30-20:30)
- GIREP General Assembly (Thursday, July, 4, 16:30-17:30)



REPORT ON EARLY CAREER TOPICAL DISCUSSION – AAPT/GIREP SUMMER 2018

Purpose and Session Overview:

In 2017, Claudia and Daryl attended the GIREP conference (International Research Group on Physics Teaching, equivalent to the AAPT/PERC conference in the U.S.) for the first time in Dublin. They were both transitioning from PhDs into postdoctoral and early researcher positions, and it was the first conference attended during this transition time. Even though it was a positive experience to connect with a very diverse community, they noticed that there were few opportunities or safe spaces in which people in their early career stages could network and interact with other members of the community. Because of this, Daryl, Lindsay, and Claudia decided to start a new initiative within the PER community, of which GIREP, AAPT, and PERLOC have been very receptive.

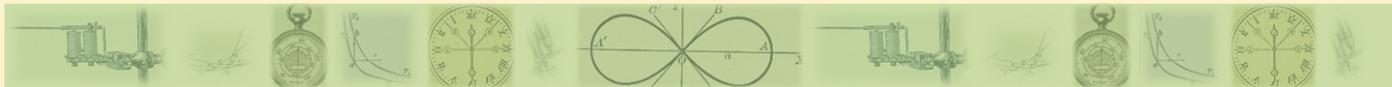
The international PER Community has been increasing professional development opportunities for both undergraduate and graduate students; now is the time to begin offering opportunities and supports for those early in their academic careers as well.

The Early Career Topical Discussion session was proposed in order to provide a space and give a chance for postdocs, new faculty, and other junior Physics Education Research (PER) members to meet, discuss common issues, and form community. As this stage can be a period of significant transition, we are looking to start conversations about how we can provide a space to facilitate community building, resources, and professional development for those starting a career in PER. This objective of the initial session was to (1) gather early career members of the PER community to an open discussion, (2) to identify what are the primary needs of members in this community are, (3) to propose strategies to address those needs, and (4) build the support structures for that community. To achieve that objective, participants were asked to discuss these topics in small groups first, then share those ideas with the room. Moderators in each of the groups guaranteed that everyone had the opportunity to share and participate, as well as keep notes of the points raised. At the end of the discussion, the session moderators summarized the different concerns raised by the groups and arranged them in themes. Those were read to the participants to make sure that they agreed with the summary. Then, participants discussed the prioritization of ideas as well as proposed a variety of ideas to address the different needs. A list of those ideas was created and discussed as a larger group. The points discussed and planned strategies are presented in this report in the following sections.

Discussion Themes:

The following themes emerged from facilitator notes from conversations with members of the PER community in the early stages of their careers at both the American Association for Physics Teachers (AAPT) Summer 2018 meeting and the GIREP 2018 meeting. A disclosure note is that the groups in GIREP were mostly formed by graduate students; this was likely due to the fact that there is no support group for graduate students there, (i.e., no equivalent of PERCoGS). Conversely, the participants in the AAPT session were mostly postdocs, two-year college faculty, and researchers entering their first year as faculty. There were emergent themes that resounded with the entire room and others that varied depending on the group.

The GIREP group was particularly interested in learning about the background and application of research methods and methodologies commonly used in PER. They wanted to have an archive where introductory papers were accessible to them. Finally, the GIREP group expressed wanting a mentoring structure that they utilize to ask introductory questions. For the group at AAPT, one of the prominent themes was related to a standard definition of the role of postdoctoral fellows, more specifically about the lack of definition of that role and how that causes issues in some cases for professional development. Both the GIREP and AAPT groups were very interested in opportunities to network, both across the PER community and with specific subgroups such as those in two-year colleges, international PER, and non-academic settings. Another emergent theme across groups was related to preparation for job



applications; this preparation was to go beyond how to write a CV and more towards understanding what jobs are accessible to a PER person in and beyond academia, how to adapt your pitch and CV depending on which type of job/department you are applying to, how to sell yourself (for the different contexts), among others. Both groups raised concerns about how to make the field more inclusive and supportive, from a diversity standpoint, but also accessibility. Finally, those who participated in the session requested information about resources and tools for physical and mental health and well-being available to support junior members in PER.

Recommendations for Moving Forward:

From this session, it was clear that Early Career researchers have a different set of needs as they transition from students to other positions within the community.

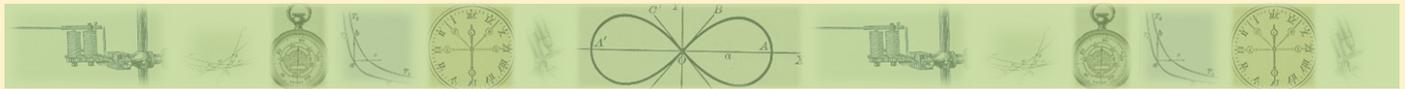
For the GIREP community, we believe that a priority would be to establish a committee or group with the purpose of providing support and a voice for graduate students. The committee or group can serve as a gateway to the PER community for graduate students and postdocs. Some of the roles of this committee can focus on providing network opportunities during the GIREP meetings, through special networking events. Also, as it is the case for the PER consortium of graduate students (PERCoGS) in AAPT, GIREP can organize a session each year that will have experts the field present or design activities related to the field of PER, such as discussions of epistemologies, differences, and similarities in quantitative vs. qualitative analysis, just to mention a few.

For the session hosted at AAPT and sponsored by the RiPE and Professional Concerns committees, the topical discussion was instrumental in starting to share needs and build resources for Early Career researchers in PER. Given the success of the topical discussion, we recommend that such a session be hosted at the future AAPT meetings as a space to share concerns, develop resources and build community among Early Career folks. From this discussion, there were also many ideas for community resources and avenues for communication outside of the annual AAPT Meetings. We, as a community, will be working over the next several years to develop some of these resources and determine productive structures for disseminating these to interested parties. Additionally, one common theme that has shown up repeatedly in the Early Career and Graduate Student Topical Discussions was a desire to know more about the career opportunities available with a PER degree and what paths there are into those careers - thus, a survey of AAPT and PERC membership about their career paths and trajectories may be warranted. While we recognize that this would be a large undertaking (and would in no way expect this to happen quickly), such a survey would provide valuable information particularly to junior people in the field about different ways that they can achieve their career goals. Finally, we would encourage AAPT to consider creating an Area Committee on Early Career Interests to help support and address the needs of its Early Career members (especially given the precedent with the Committee on the Interests of Senior Physicists).

We summarize below, what we believe are reasonable approaches to address some of the needs and concerns of the early career folks in two groups, short term and long term recommendations of things the community can adopt:

Short-term recommendations (could reasonably be implemented in the next 1-2 years):

- Offer an early career topical discussion every year
- Establish a place for communication and resources available year round, when not at conferences, such as a website, listserv, or similar platform where the community can stay in touch
- Limit time membership of those on the listserv (or other mailing platforms).
- In order for this community to serve as a safe space for the members; i.e. as members move away from the early career status they should not be part of the mailing list to avoid power struggles in the community.
- Establish a place for resources, such as a website or database where resources can be easily found and redirects to other available resources.
- Regarding the job applications we suggest:



- Access to practice interviews and interview materials
- Offer resources that highlight the different career paths available and how to access them
- Hold workshops and panels at conferences (i.e., funding for workshops) and webinars
- Start a mentoring program or support group that is willing to proofread materials, provide feedback.
- Provide grants to aid mitigate expenses during the interview process (especially for minority groups) (Such as resources like: “The Professor is In” book, “The Art of the Cover Letter”)
- Access to a “How to” list of resources
 - How to join an AAPT/GIREP committee
 - How to write a guest editorial
 - How to organize a session at an AAPT/GIREP meetings
 - How to tell the difference between different organizations or structures within PER community, such as RiPE, PERLOC, different theme groups in GIREP?

Long-term recommendations (would reasonably need 2-5+ years to implement):

- Create, distribute, and analyze a career path survey of the community
- Discuss consideration for a Committee on Early Career interests with session sponsorships and workshop slots

Claudia Fracciola, Daryl McPadden, Lindsay Owens

GIREP CONFERENCE PROCEEDINGS AND GIREP BOOKS

Recently published :

- Selected papers presented in GIREP-ICPE-EPEC Conference 2017, *Concepts, Strategies and Models to Enhance Physics Teaching and learning* (eds. E. McLoughlin, P. van Kampen) have been published by Springer: <https://www.springer.com/us/book/9783030181369> (estimated print publication date: August 2019)
- Selected papers from 2nd WCPE in Sao Paolo, *Upgrading Physics Education to Meet the Needs of Society* (ed. M. Pietrocola Pinto de Oliveira) is available at: <https://www.springer.com/gp/book/9783319961620>
- Selected papers presented in GIREP Seminar 2016, *The Role of Laboratory Work in Improving Physics Teaching and Learning* (eds. D. Sokołowska, M. Michelini) have been published by Springer: <https://www.springer.com/gp/book/9783319961835>.
- On-line Proceedings of the GIREP 2016 Seminar in Krakow, *Research-based proposals for improving teaching and learning – focus on laboratory work* (ed. D. Sokolowska) were published by IOP and are available by open access at: <http://iopscience.iop.org/issue/1742-6596/1076/1>

On the basis of the written agreement between GIREP and Springer Publisher for publishing Selected Paper Books and Books on Specific Content Topics, the series of GIREP books will be continued. The books published by Springer will be accessible for each GIREP member and the participant of the relevant GIREP conference via a password sent by e-mail. Analogous written agreement between GIREP and IOP has been prepared. It relates to the GIREP Conference Proceedings published on-line in open access.

In production:

- The book of selected papers with contributions presented in GIREP-MPTL 2018 Conference in San Sebastian (Springer)
- On-line Proceedings of GIREP-MPTL 2018 Conference in San Sebastian (IOP)
- The book of selected papers (ed. G. Pospiech) on Mathematics in Physics Education (Springer)

WHAT IS GOING ON? NEWS FLASHES FROM GIREP COUNTRIES AND PARTNERS

International European Quantum Flagship

During the International European Quantum Flagship Grenoble conference GIREP was represented by Vice-president Wim Peeters. In preparation for this conference the awareness within EQF of connecting to the field of education grew a lot, which resulted in some important slides on education during the opening ceremony.

Some 20 engaged stakeholders (and after the conference even more people were taken on board) of physics education working group held flash presentations, followed by a brainstorming session. The focus was to start up a sustainable process of interaction between the physics education research field and the European Quantum Flagship project partners, including the European Commission. Not surprisingly, rather quickly an agreement was achieved on the first draft of a vision text, to a strategic agenda for support of the physics education community to the goals of the EQFG, and to raise awareness of the European Commission for the role of physics education in this topic. The slide below (shown at the end of the conference) illustrates some of the work done by the group.

Education Workshop - report
Education working Group

Day 2: Working in Groups

- Pillars:
 - High school
 - University: Future careers training
 - Quantum awareness for key actors
- Transversal challenges:
 - Keep it Sustainable
 - Embrace the National Diversity
 - Funding schemes
 - Time scales

As a result at the end of the meeting a short text was created in order to establish a road map (strategic plan) to support the Quantum technology education project:

Specific challenge:

Quantum technology is a rapidly accelerating field of research and development with a strong potential for economic growth. While quantum physics is included in all university curricula as well as school curricula in some European countries, this does not satisfy the needs for quantum awareness, a quantum-ready workforce, and modern quantum education. This call aims at creating a pan-European agenda for the development of modern quantum technology education facilities serving the necessary key-actors to reach an industrial target group.

Scope:

Applications should propose a program that aims to develop a quality-controlled educational strategy for quantum engineering and industrial applications of pan-European reach. The project should facilitate companies to host students of a QT dedicated master program for a period of 3 to 6 months. One outcome should be a network of the training program pilots based on current best practices linked with the industrial target group. It should provide a meaningful way to analyze the shortcomings of education in quantum physics to engineers and other non-physics majors, and develop a roadmap for reform.

The strategic outcome should be a set of recommendations for engineering education in quantum technologies that also identifies the need for further education research aligned with the needs of future industry. A successful application should include multiple European countries along with a plan to reach the whole union. Applicants should demonstrate a clear record in education research.

In continuation of this work, during the Budapest conference many initiatives are taken to connect research in physics education from all over the world with the European Quantum Flagship community.

3DIPhE ERASMUS+ project in Belgium/Flanders

Three organizations collaborated in organizing a regional exchange of practitioners inquiries (PI) done by physics teachers in the framework of a European Erasmus+ project, 3DIPhE. A PI is a small bottom up research done by a practitioner (in this case a physics teacher) to improve his teaching (in this case Inquiry Based Learning). The word inquiry means that he needs to provide evidence (data and conclusions) to show that the learning of the students has enhanced. The 5 teachers that volunteered got a certificate for elaborating this task in a very professional way.



Fot. W. Peeters

If you are interested in this method of personalized professional development, please attend the workshop in GIREP 2019 in Budapest, given by Wim Peeters.

International Course On Practitioner Inquiry In Inquiry-Based Classes, September 2019

As a spin-off of the ongoing European project “3 Dimensions of Inquiry in Physics Education” (3DIPhE) the Jagiellonian University of Krakow (PL) and Katholiek Onderwijs Vlaanderen (BE) will organize together an international one week course from 22nd until 27th of September 2019. The aim of this professional development course is to improve implementation of inquiry based learning (IBL) by physics or science teachers, to guide teachers through their practitioner inquiry (PI) to measure the impact of their adapted or adopted, more inquiry based lessons on all kinds of learning of their students, and also to give future physics teacher coaches insights on how to make teachers collaborate in a professional learning community (PLC). The course will provide materials on all 3 levels (dimensions): examples of best practices of IBL, guidelines for doing a PI, and tools for future coaches to improve dialogue and collaboration among teachers in PLC's. All these materials are proven to be of the best quality to provide a sustainable output of the course. If you are interested and want more information on practicalities, please have a look at the [website](#), or contact D. Sokolowska (ufdsokol@cyf-kr.edu.pl) or W. Peeters (wim.peeters.int@gmail.com).

FUTURE CONFERENCES



ESERA Conference 2019

The Conference will be organized in Bologna, 26-30 August 2019_(call for abstracts until 31st of January 2019):

<http://www.esera2019.org/>

3rd World Conference in Physics Education 2020

From teacher Education to School Practices

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

<https://www.facebook.com/pg/WCPE2020/posts/>

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>

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 (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, Dagmara Sokółowska dagmara.sokolowska@uj.edu.pl until the 15th of November 2019.

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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.