

Conference Program

Date	Time	Program			
Sunday 18 Oct 2009	15:00-20:00	Arrival of Delegates			
		Registration			
Monday 19 Oct 2009	07:30-08:30	Registration			
	08:30-09:15	Inaugural and Award			
	09:15-10:00	UNESCO Inaugural			
	10:00-10:30	<i>Refreshments</i>			
	10:30-11:15	Plenary Presentation: (PP-01) <i>Eric Mazur</i>			
	11:15-12:00	Plenary Presentation: (PP-02) <i>Ton Ellermeijer</i>			
	12:00-13:00	<i>Lunch</i>			
	13:00-13:45	Keynote Presentation: (KP-01) <i>Lillian McDermott</i>			
	13:45-14:30	Keynote Presentation: (KP-02) <i>Priscilla Laws</i>			
	14:30-15:00	Conference Activities			
	15:00-15:30	<i>Refreshments</i>			
	15:30-16:15	Keynote Presentation: (KP-03) <i>Dean Zollman</i>			
16:15-17:00	Keynote Presentation: (KP-04) <i>Bhinyo Panijpan</i>				
Tuesday 20 Oct 2009	08:30-09:15	Keynote Presentation: (KP-05) <i>Kenneth Krane</i>			
	09:15-10:00	Keynote Presentation: (KP-06) <i>David Sokoloff</i>			
	10:00-10:30	<i>Refreshments</i>			
	10:30-11:15	Keynote Presentation: (KP-07) <i>Stephen Benka</i>			
	11:15-12:00	Keynote Presentation: (KP-08) <i>Richard Lindgren</i>			
	12:00-13:00	<i>Lunch</i>			
	13:00-13:45	Keynote Presentation: (KP-09) <i>Ian Johnston</i>			
	13:45-14:30	Keynote Presentation: (KP-10) <i>Alex Mazzolini</i>			
	14:30-15:00	Conference Activities			
	15:00-15:30	<i>Refreshments</i>			
	15:30-17:00	Poster Sessions			
18:30-20:30	Conference Reception Dinner				
Wednesday 21 Oct 2009		Room I	Room II	Room III	Room IV
		Multidisciplinary contexts (D4)	Teacher training (B3)	Role of ICT (C4)	Link teaching to research (C3)
	08:30-08:45	DO-01	BO-01	CO-19	CO-01
	08:45-09:00	DO-02	BO-02	CO-20	CO-02
	09:00-09:15	DO-03	BO-03	CO-21	CO-03
	09:15-09:30	DO-04	BO-04	CO-22	CO-04
	09:30-09:45	DO-05	BO-05	CO-23	CO-05
	09:45-10:00		BO-06	CO-24	CO-06
	10:00-10:30	<i>Refreshments</i>			

Date	Time	Program			
		Room I	Room II	Room III	Room IV
Wednesday 21 Oct 2009		PER with technologies (D3)	Teacher training (B3) & Physics for women (B2)	Role of ICT (C4)	Link teaching to research (C3)
	10:30-10:45	DO-06	BO-07	CO-25	CO-07
	10:45-11:00	DO-07	BO-08	CO-26	CO-08
	11:00-11:15	DO-08	BO-09	CO-27	CO-09
	11:15-11:30	DO-09	BO-10	CO-28	CO-10
	11:30-11:45	DO-10	BO-11	CO-29	CO-11
	11:45-12:00	DO-11			CO-12
	12:00-13:00	<i>Lunch</i>			
		Public awareness (A4) & Set agenda (A1) & Curriculum (A2)	Community Outreach (B4) & Global PER (D2)	Current PER (C2)	Link teaching to research (C3)
	13:00-13:15	AO-01	BO-12	CO-30	CO-13
	13:15-13:30	AO-02	BO-13	CO-31	CO-14
	13:30-13:45	AO-03	DO-12	CO-32	CO-15
	13:45-14:00	AO-04	DO-13	CO-33	CO-16
	14:00-14:15	AO-05	DO-14	CO-34	CO-17
	14:15-14:30	AO-06		CO-35	CO-18
	14:30-15:00	<i>Refreshments</i>			
		Physics curriculum design (A2)	PER within local and cultural contexts (B1)	Current PER (C2)	PER in developing countries (C1) & Bridging PER (A3)
	15:00-15:15	AO-07	BO-14	CO-36	CO-43
	15:15-15:30	AO-08	BO-15	CO-37	AO-14
	15:30-15:45	AO-09	BO-16	CO-38	AO-15
15:45-16:00	AO-10	BO-17	CO-39	AO-16	
16:00-16:15	AO-11	BO-18	CO-40		
16:15-16:30	AO-12	BO-19	CO-41		
16:30-16:45	AO-13	BO-20	CO-42		
Thursday 22 Oct 2009	08:30-16:30	Delegates Tours			
Friday 23 Oct 2009		Room I			
	08:30-08:45	AO-20			
	08:45-09:00	AO-21			
	09:00-09:15	AO-22			
	09:15-09:30	AO-23			
09:30-10:00	Closing				
Saturday 24 Oct 2009	08:30-16:30	Departure of Delegates			

List of Presentations

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Plenary Presentations

- PP-01** The scientific approach to teaching: Research as a basis for course design
E. Mazur
School of Engineering and Applied Sciences, Harvard University, Cambridge, MA 02138, USA
- PP-02** Towards More Authenticity in Physics Education Enabled by a Versatile ICT Learning Environment
T. Ellermeijer
AMSTEL Institute, University of Amsterdam, The Netherlands

Keynote Presentations

- KP-01** Research as a Guide for Promoting Student Understanding of Physics
L.C. McDermott
Department of Physics, University of Washington, Seattle, WA 98195-1560, USA
- KP-02** The Role of Research Based Active Learning and Video Analysis in Promoting Understanding of 2D Motion
P. W. Laws
Dickinson College, Carlisle, Pennsylvania 17013, USA
- KP-03** Teaching about the Physics of Medical Imaging
D. Zollman, D. McBride¹, S. Murphy, B. Aryal¹, S. Kalita¹, J. v.d. Wirjawan²
¹Kansas State University Manhattan, KS 66506 USA
²Widya Mandala Catholic University at Surabaya, Indonesia
- KP-04** Biophysics Education
B. Panijpan
Institute for Innovation and Development of Learning Process, Mahidol University, Bangkok, Thailand
- KP-05** A National Program in the United States to Prepare New Faculty in Physics and Astronomy
K. S. Krane
Department of Physics, Oregon State University, Corvallis, OR, 97331, USA
- KP-06** Interactive Lecture Demonstrations Using Personal Response Systems
D. R. Sokoloff
University of Oregon, Oregon, USA
- KP-07** Physics and 21st-Century Students
S. G. Benka
Editor-in-chief, Physics Today, AIP
- KP-08** Professional Development Graduate Courses for K-12 Teachers and a Masters of Arts in Physics Education with a Distance-Learning and Web Based Course Component
R. Lindgrena, S. Thorntonb
Department of Physics, University of Virginia, Charlottesville, VA 22904, USA
- KP-09** Teaching Science within the Local Culture: The Physics of Your Country's Music
I. D. Johnston
School of Physics, University of Sydney, NSW 2006, Australia

KP-10 Active Learning Activities to Enhance Students' Understanding of Operational Amplifiers at the Introductory University Level*A. Mazzolini^{1*}, T. Edwards¹, W. Rächinger¹, S. Nopparatjamjornras^{1,2}, O. Shepherd¹*¹Active Learning Group, Faculty of Engineering and Industrial Sciences, Swinburne University of Technology, PO Box 218, Hawthorn, 3122, Australia²Center for Learning Development, Mahidol University, Rama VI, Bangkok 10400, Thailand

Oral Presentations

Section A: Bringing physics education into the 21st century**AO-01** Activity of Nagoya Science Literacy Forum*J. Yasuda¹, M. Taniguchi², T. Uchida², H. Kawakatsu²*¹Center for Study of Higher Education, Nagoya University, Nagoya 464-8601, Japan²Comprehensive Scientific Education Center, Meijo University, Nagoya 468-8502, Japan**AO-02** Development of the Students' Metacognitive Strategies in Science on Nuclear Energy through Science Technology and Society Approach*W. Siriuthen, C. Yuenyong*

Science Education, Faculty of Education, Khon Kaen University, Khon Kaen, Thailand

AO-03 Strategies for Socializing Physics through the Use of Video Games*A. Pretelin-Ricardez*

Instituto Politécnico Nacional, Unidad Profesional Interdisciplinaria en Ingeniería y Tecnologías Avanzada (UPIITA - IPN), Mexico

AO-04 Sense of Achievement in Physics Education in Morocco since ICPE 2007: the Case Study of Cadi Ayyad University*K. Berrada*

Department of Physics, Faculty of Sciences Semlalia, Cadi Ayyad University, B.P. 2390, Marrakech, Morocco

AO-05 Vision of Science and Physics: A Survey of Astronomy Conceptions of Secondary School Physics Teachers in Karachi*J. A. Mayo¹, M. Irfan²*¹Govt. Adamjee Science College, Karachi, Pakistan²Bright Star School, Karachi, Pakistan**AO-06** Reality Physics Teaching (RPT) for Enhancing Student Favorable Expectations*U. Wutchana¹, N. Emarat²*¹Institute for Innovative Learning, Mahidol University, Rama VI, Bangkok 10400, Thailand²Department of Physics, Faculty of Science, Mahidol University, Rama VI, Bangkok 10400, Thailand**AO-07** Using PER to Restructure Physics Knowledge*I. M. Sefton*

School of Physics, The University of Sydney, NSW 2006, Australia

AO-08 Towards the True Physics of Flight at School*S. Ossa, T. López-Arias, L. M. Gratton*

Physics Department – University of Trento, 38123 Povo (Trento) - Italy

AO-09 Framework for Curriculum Design in Engineering Physics*C. B. Bhatta, U. N. Trivedi**

Department of Instrumentation & Control, Vishwakarma Government Engineering College, Chandkheda, Ahmedabad – 382424, India

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- AO-10** Four Developmental Stages for Cultivating Interdisciplinary Scientists and Engineers – SAIL Program –
K. Misawa^{*}, *H. Shimada*, *K. Muroo*, *O. Nitoh*, and *O. Sano*
 Department of Applied Physics, Tokyo University of A&T, Koganei 184-8588, Japan
- AO-11** New introductory program designed to encourage logical thinking
M. Shoji^{1*}, *K. Hashizume*², *S. Matsuzaki*², *H. Minoda*², *K. Misawa*²
¹Center for Higher Educational Development, Tokyo University of Agriculture and Technology, Koganei Tokyo 184-8588, Japan
²Department of Applied Physics, Graduate School of Engineering, Tokyo University of Agriculture and Technology, Koganei Tokyo 184-8588, Japan
- AO-12** Designing Physics Curriculum of the 21st Century at Universiti Teknologi MARA
J. Jantan
 Faculty of Applied Sciences, Universiti Teknologi MARA, 40450 Shah Alam, Selangor, Malaysia
- AO-13** Physics Education in China
N. Wu
 Science Building Center for Advanced Studies, Tsinghua University, Beijing, 100084, China
- AO-14** A State Network of Educating Popularisers in Science
H. A. J. Villarreal, *M. T. G. Cepeda*, *A. Z. Álvarez*, *S. G. Cabrera*, *J. A. Cervantes*
 Taller Infantil de Física Espacial, 2Instituto Potosino de Investigación Científica y Tecnológica
- AO-15** Education Policy its Anomalies and Physics Curriculum in Bangladesh
M. M. Hossain
 Department of Applied Physics and Electronic Engineering, Rajshahi, University, Rajshahi, Bangladesh
- AO-16** Physics Education through Hands-on Approach
K. M. Gopal
 Project coordinator Regional Science centre, National council of science museums Near Alipiri Gate Tirupati-517507 Andhra Pradesh INDIA

Section B: Engaging physics education to the real world

- BO-01** The Analyses of the Change Process of Elementary School teachers' Physics Conceptions on the movement of Electric Charges
J. S. Lee, *J. B. Kim*
 Department of Physics Education, Korea National University of Education, Chungbuk 363-791, Korea
- BO-02** Need for Initiatives to Promote Procedural Understanding in Physics Among School Teachers
R. B. Khaparde
 Homi Bhabha Centre for Science Education, Tata Institute of Fundamental Research, V. N. Purav Marg, Mankhurd, Mumbai 400088, INDIA
- BO-03** Enhancement of Deep Understanding and Long-Lasting Remembrance on Bernoulli's Principle with the Active Pedagogical Method in Teacher Education
U. Tipparach
 Development of Physics, Ubon Rajathanee University, Warinchamrab, Ubon Ratchathani 34190, Thailand

- BO-04** The Contextual Approach to Teach Physics to Non-Physics Major
S. Hendon S. Abdullah
 Science Department, Teacher Education Institute Malaysia, Technical Education Campus, Kuala Lumpur
- BO-05** Integration of the application message into the theoretical part of the physics laboratory direction to improve students' awareness of linking the experiment with their real life
J. Huntula¹, R. Chitaree²
¹Institute for Innovative learning, Mahidol University, Bangkok, Thailand
²Department of Physics, Faculty of Science, Mahidol University, Bangkok, Thailand
- BO-06** BASIC PHYSICS DEMOS WITH A SCHOOL BAG LAB
V. C. Verekar
 Progress High School , Sanquelim Goa – India 403505
- BO-07** Teaching Of Optics and Lasers in Introductory Physics
L. A. Jeresano¹, I. B. Culaba^{2}*
¹Bicol University Gubat Campus, Gubat, Sorsogon, 4710 Philippines
²Department of Physics, Ateneo de Manila University, Quezon City, 1108 Philippines
- BO-08** Bridging the Gap between High School and University Physics Experiences
T. Antimirova, P. Goldman
 Ryerson University, Toronto, Ontario M5B 2K3, Canada
- BO-09** Using a Contextualised Project to Increase Self Efficacy in Basic Electrical Technology amongst Female Students
J. Mackay
 School of Mathematics, Science and Technology Education, University of KwaZulu Natal, Private Bag X03, Ashwood 3605, South Africa
- BO-10** Simple and Beautiful Experiments III by LADY CATS and Science Teachers' group
M. Tanemura¹, F. Okiharu^{2}, K. Ishii³, H. Onishi⁴, M. Taniguchi⁵, T. Uchida⁵, J. Yasuda⁶, T. Hoshino⁵, T. Yoshimura⁵, T. Hashimoto⁵, S. Wada¹, K. Kinoshita¹, T. Ebata², H.Kawakatsu⁵*
¹Faculty of Education, Osaka Kyoiku University, Osaka 543-0054, Japan
²Faculty of Education, Niigata University, Niigata 950-2181, Japan
³Faculty of Education and Regional Studies, Fukui University, Fukui 910-8507, Japan
⁴Nishinomiya-Imazu Senior High School, Nishinomiya 663-8154, Japan
⁵Comprehensive Scientific Education Center, Meijo University, Nagoya 468-8502, Japan
⁶The Center for the Studies of Higher Education, Nagoya University 464-8601, Japan
- BO-11** Gender Differences in Physics
X. Feng^{1}, L. Bao², Z. Yu³, Z. Huang¹*
¹Physics Department, Huazhong Normal University, Wuhan 430079, China
²Physics Department, The Ohio State University, Columbus 43210,USA
³Education Department, Huazhong Normal University, Wuhan 430079,China
- BO-12** Bringing Physics Closer to the People: Reflections on Exemplary Practices in Service Learning
A. C. Larroder
 Science, Math & Technology Department, Philippine Science High School Western Visayas Brgy. Bito-on, Jaro, Iloilo City 5000 Philippines
- BO-13** Meaning of Educating Science Volunteer Leaders
M. Taniguchi, T. Hoshino, T. Yoshimura, T. Hashimoto, T. Uchida, H. Kawakatsu
 Comprehensive Scientific Education Center, Meijo University, Nagoya 468-8502, Japan

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- BO-14** Pan Indian Survey of Students' Understanding of Rotational Motion
P. Pathak^{1}, V. A. Singh¹, C. Singh³*
¹Homi Bhabha Centre For Science Education (TIFR), V. N. Purav Marg, Mankhurd, Mumbai - 400088.
³Department of Physics and Astronomy, University of Pittsburgh, Pittsburgh, Pennsylvania, USA
- BO-15** Inconsistent Ideas Related to Particle Motion at P-wave Arrival of University Thai Students
S. Rakkapao^{1}, K. Arayathanikul², P. Pananont³*
¹Institute for Innovative Learning, Mahidol University, Rama VI, Bangkok 10400, Thailand
²Department of Physics, Mahidol University, Rama VI, Bangkok 10400, Thailand
³Department of Earth Sciences, Kasetsart University, Bangkok 10900, Thailand
- BO-16** An in-depth analysis of student responses to the Force and Motion Conceptual Evaluation by using Model Analysis and new question clusters
A. Tongchai¹, K. Arayathanikul²
¹Institute for Innovative Learning, Mahidol University, Bangkok, Thailand
²Department of Physics, Faculty of Science, Mahidol University, Bangkok, Thailand
- BO-17** Entry-Level Science Students' Alternative Conceptions about Frictional Force
S. Prasitpong^{1}, R. Chitaree²*
¹Institute for Innovative Learning, Mahidol University, Rama VI, Bangkok 10400, Thailand
²Department of Physics, Mahidol University, Rama VI, Bangkok 10400, Thailand
- BO-18** Physics Teaching and Learning Methods: Comparison Between the Developed and Developing Country Approach
P. K. Deb
 Discipline of Medical Radiations, School of Medical Sciences, RMIT University, Bundoora 3083, Australia
- BO-19** What is a required in Uganda? The 2007 report of the Japan sci-edu. support project
T. Uchida
 Comprehensive Scientific Education Center, Meijo University, Nagoya 468-8502, Japan
- BO-20** College Students' Intuitive Understanding of Energy and Momentum and Their Procedures of Problem-Solving Thinking
O. Chittasirinuwat¹, T. Kruatong¹, B. Paosawatanyong²
¹Institute for Innovative Learning, Mahidol University, Rama VI, Bangkok 10400, Thailand
²Department of Physics, Chulalongkorn University, Bangkok 10330, Thailand

Section C: Developing new and effective learning approaches for physics education

- CO-01** Safe Torricelli Experiment for Educational use in a Science Resource Centre
V. Aggarwal¹, S. Kumar²
¹C-536, Saraswati Vihar, Delhi-110034, INDIA
²Delhi Public School, Dwarka Sector-3, Delhi-110075, INDIA
- CO-02** Peer Instruction Gain: Measuring the Effectiveness of Peer Instruction
H. Nittaa, H. Takahashi, M. Kaneta*
 Department of Physics, Tokyo Gakugei University, Koganei, Tokyo 184-8501, Japan
- CO-03** The Misconceptions on Newton's 3rd Law
T. Suzuki
 High School, University of Tsukuba, Otsuka, Bunkyo-ku, Tokyo 1120012, Japan

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- CO-04** Towards Cognitive Coherence in Physics Learning: Imageability of Undergraduate Solid State Physics Course
S. Sharma^{1}, P. K. Ahluwalia²*
¹Department of Physics, St. Bede's College, Shimla 171 002, India
²Department of Physics, Himachal Pradesh University, Shimla 171 005, India
- CO-05** Improving Synergies through the Mentoring of Student Teachers during Practical Training in Schools and Their Integration in Applied Research
U. Böhm¹, G. Pospiech²
¹Center for teacher education and research, Technische Universität Dresden, Germany
²Department of Physics, Technische Universität Dresden, Germany
- CO-06** Physics Education in Iranian Schools
D. Izadi¹, N. Izadipanah²
¹PYPT president, IYPT IOC member, Head international affairs Iranian Society of Marine Science and Technology, Tehran, Iran
²Student, Physics Department of the Islamic Azad University, North Tehran Branch, Tehran, Iran
- CO-07** The Influence of Group Work Discussion on Scores of the Force Concept Inventory in Lao PDR
P. Luangrath^{1}, S. Pettersson²*
¹Department of Physics, National University of Laos and Umea University, SE-90187 Umea, Sweden
²Department of Physics, Umea University, SE-90187 Umea, Sweden
- CO-08** Pre-conceptions of Newton's Laws of Motion of Students in Introductory Physics
E. Q. B. Macabebe, I. B. Culaba, J. T. Maquiling*
 Department of Physics, Ateneo de Manila University, Loyola Heights, Quezon City 1108 Philippines
- CO-09** Simple Experiments and Topics Demonstration in Science Lessons
T. Tamaki^{1,2}, T. Nishida³*
¹Higher Education Center, Gunma University, Aramaki 4-2, Maebashi 371-8510, Japan
²Mathematical Assist Design Laboratory, Kamisadori 54-2, Maebashi 371-0816, Japan
³Department of Biological and Environmental Chemistry, Faculty of Humanity-Oriented Science and Engineering, Kinki University, Kayanomori 11-6, Iizuka 820-8555, Japan
- CO-10** Tension between Content and Inquiry in University Physics Reconciled
J. Henningsen^{1}, B. F. Johannsen²*
¹Niels Bohr Institute, University of Copenhagen, Universitetsparken 5, DK2100 Copenhagen, Denmark
²Department of Science Education, University of Copenhagen, Universitetsparken 15, DK2100 Copenhagen, Denmark
- CO-11** On the Conceptual understanding of Moment of Force for Secondary One Students in Singapore
S. K. Munirah¹, S. K. Foong², P. Lee², C. C. Lim¹
¹Centre for Research in Pedagogy & Practice, National Institute of Education, Nanyang Technological University, Singapore
²Natural Sciences and Science Education, National Institute of Education, Nanyang Technological University, Singapore
- CO-12** Novel Approaches to Evaluating and Modelling Physics Instructions
P. Pathak, V. A. Singh*
 Homi Bhabha Centre For Science Education (TIFR), V. N. Purav Marg, Mankhurd, Mumbai - 400088

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- CO-13** Homework on the Moment of Inertia of a Human Arm
O. Hirayama
 Department of Mechanical Systems Engineering, Tokyo University of Agriculture and Technology,
 Tokyo 184-8588, Japan
- CO-14** The Challenge of Teaching Elementary Optics – Solutions from Classroom Research
J. Vijapurkar
 Homi Bhabha Centre for Science Education, Tata Institute of Fundamental Research, V. N. Purav
 Marg, Mankhurd, Mumbai 400088, India
- CO-15** On the Conceptual understanding of the Photoelectric Effect
S. K. Foong¹, P. Lee¹, C. C. Lim², D. Wong¹, Y. P. Chee³
¹Natural Sciences and Science Education, National Institute of Education, Nanyang Technological
 University, Singapore
²Centre for Research in Pedagogy & Practice, National Institute of Education, Nanyang
 Technological University, Singapore
³Higher Education Division, Ministry of Education, Singapore
- CO-16** On the Attitude of Secondary 1 students towards Science
L. Kuppen¹, S. K. Munirah¹, S. K. Foong¹, S. S. Yeung²
¹Natural Sciences and Science Education, National Institute of Education, Nanyang Technological
 University, Singapore
²Centre for Research in Pedagogy & Practice, National Institute of Education, Nanyang
 Technological University, Singapore
- CO-17** A Useful Pedagogical Approach to Hydrogen Spectrum
M. S. Khan, N. Iqbal
 Department of Physics, Kashmir University, Srinagar 19006, India
- CO-18** Using Wiring Diagrams as a Tool to Reveal Student Thinking: A Contextual Approach to
 Learning Current Electricity
J. Mackay
 School of Mathematics, Science and Technology Education, University of KwaZulu Natal, Private
 Bag X03, Ashwood 3605, South Africa
- CO-19** Motion Analysis of Movement of an Object onto Fine Plastic Beads Using High-Speed
 Camera
M. Sato
 School of Science, Tokai University, 1117 Kitakaname, Hiratsuka, Kanagawa, 259-1292, Japan
- CO-20** Teaching Physics Using Virtual Reality
C. Savage^{1}, D. McGrath², T. McIntyre³, M. Wegener³, M. Williamson¹*
¹Center for Learning and Teaching in the Physical Sciences, The Australian National University,
 Canberra, ACT 0200, Australia
²The Teaching and Educational Development Institute, The University of Queensland, Brisbane
 4072, Australia
³School of Physics, The University of Queensland, Brisbane 4072, Australia
- CO-21** Effective Inclusion of e-Learning in a Subject of Physics Experiments: Introductory
 Electronics Laboratory
T. Okuno^{1}, K. Abe¹, N. Yamazaki², A. Ooe², K. Igarashi², S. Hayashi¹, M. Suzuki¹*
¹Department of Applied Physics and Chemistry, The University to Electro-Communications, Chofu,
 Tokyo 182-8585, Japan
²Devison of Technical Staffs, The University to Electro-Communications, Chofu, Tokyo 182-8585,
 Japan

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- CO-22** Active Learning Approaches by Visualizing ICT Devices with Milliseconds Resolution for Deeper Understanding in Physics
A. Kobayashia, F. Okiharub
Faculty of Education, Niigata University, Niigata 950-2181 Japan
- CO-23** Development of Handheld-Game-Console "Nintendo DS" Aided Interactive Class
Funahashi, H., Murakami, Y., Katsuma, T., and Hayano, H.*
Osaka Electro-Communication University, Neyagawa city, Osaka, 572-8530, JAPAN
- CO-24** PhET Interactive Simulations as Effective Visualization Tool in the Teaching of Basic Circuit Concepts
J. T. Maquiling, I. B. Culaba, E. Q. B. Macabebe
Department of Physics, Ateneo de Manila University, Philippines
- CO-25** Towards Scientific Concept Acquisition under Ubiquitous Environment
F. Okiharu, A. Kobayashi
Faculty of Education, Niigata University, Niigata 950-2181, Japan
- CO-26** The Relation between Physics Teacher's Using Ability and Using Frequency of Computer Communication Technologies (CCT) in Classroom Setting
A. Azar
Department of Secondary Science and Mathematics Education, Zonguldak Karaelmas University, Zonguldak 67300, Turkey
- CO-27** Effectiveness of Animated Computer Graphics on Vacuum Works for Undergraduate Students
U. Tipparach^{1}, A. Ratthirom²*
¹Development of Physics, Ubon Rajathanee University, Warinchamrab, Ubon Ratchathani 34190, Thailand
²Department of Mathematics, Statistics, and Computer Science, Ubon Rajathanee University, Warinchamrab, Ubon Ratchathani 34190, Thailand
- CO-28** Game Programming Platforms. What can We do to Contribute to the Teaching-Learning Process of Physics?
A. Pretelin-Ricardez
Instituto Politécnico Nacional, Unidad Profesional Interdisciplinaria en Ingeniería y Tecnologías Avanzada (UPIITA - IPN), Mexico
- CO-29** Optics and Light Activities for Teachers of all Grade Levels from Inexpensive and Easily Obtainable Supplies
C. Hendricks, R. Lindgren, S. Thornton
Department of Physics, University of Virginia, Charlottesville, VA 22904, USA
- CO-30** Micro-modelling in the Process of Constructing and Understanding Physical Theories using the example of the plane mirror image
U. Böhm¹, G. Pospiech², H. Körndle³, S. Narciss⁴
¹Center for teacher education and research, Technische Universität Dresden, Germany
²Department of Physics, Technische Universität Dresden, Germany
^{3,4}Department of Psychology, Technische Universität Dresden, Germany
- CO-31** Preconceptions of Japanese students surveyed with the Force and Motion Conceptual Evaluation
M. Ishimoto
Environmental Systems Engineering Department, Kochi University of Technology, Tosayamada-cho, Kami-shi, Kochi, 782-8502, Japan.

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- CO-32** Cognitive Architecture of Common and Scientific Concepts
P. Tarábek
 Educational Publisher Didaktis – member of the European Educational Publishers Group,
 Hasselager, Denmark & Curriculum Studies Research Group – College of Applied Economical
 Studies, Czech Republic
- CO-33** On the role of gender and prior knowledge in first year university physics students self-
 efficacy
*M. D. Sharma**, *C. Lindstrom*
 SUPER group, School of Physics, University of Sydney, NSW 2006, Sydney Australia
- CO-34** Pre-Service Teachers' Views of the Demonstration Strategy of Teaching in Physics
J. V. Lubrica
 Benguet State University, La Trinidad, Benguet 2601, Republic of the Philippines
- CO-35** Seating Arrangement, Group Composition and Competition-driven Interaction: Effects on
 Students' Performance in Physics
R. M. Roxas^{1}*, *S. Carreon-Monterola²*, *C. Monterola¹*
¹National Institute of Physics, University of the Philippines, Diliman, Quezon City 1101, Philippines
²College of Education, University of the Philippines, Diliman, Quezon City 1101, Philippines
- CO-36** Physics Education by Inhomogeneous Fields in Daily-life Phenomena
T. Kato^{1}*, *M. Muro²*
¹Faculty of Education, Chiba University, 1-33 Yayoi-cho, Inage-ku, Chiba 263-8522, Japan
²Graduate School of Education, Chiba University, Inage-ku, Chiba 263-8522, Japan.
- CO-37** How to guide the scientific investigation to the high school student
Y. Takikawa
 The University of TOKYO, Komaba Meguro-ku, Tokyo, JAPAN
- CO-38** Can Amusement Parks Teach Physics?
A. Pendrill
 Department of Physics, University of Gothenburg, SE 412 96 Gothenburg, Sweden
- CO-39** Inquiry Process at Physics Laboratory: Transformer Case
*N. Didiş, Ö. Oktay, U. Yıldırım**
 Department of Secondary Science and Mathematics Education, Middle East Technical University,
 Ankara 06531, Turkey
- CO-40** Students' Understanding of Scientific Models: A Modern Physics Course Case
N. Didiş, A. Eryılmaz
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 Ankara 06531, Turkey
- CO-41** Role of Thought Experiments on Problem Solving for Experts and Novices
Ş. Dönertaş
 Secondary Science and Maths Education, Middle East Technical University, Ankara, Turkey
- CO-42** Standing Thermal Waves in the Physics Teaching Lab
S. Shamima, W. Zia, M. S. Anwar
 School of Science & Engineering, Lahore University of Management Sciences (LUMS), Opposite
 Sector U, D.H.A, Lahore 54792, Pakistan
- CO-43** Teaching Doppler Effect with a Passing Noise Source
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Section D: Preparing physics education to provide solutions to global challenges

- DO-01** What Are the Limits of Validity of Science? New Lab-Course for Scientific Literacy of Humanities Students
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¹Department of Physics, Tohoku University, Sendai 980-8578, Japan
²Center for the Advancement of Higher Education, Tohoku University, Sendai 980-8576 Japan
- DO-02** Using News as Interdisciplinary Contexts on Physics Classes
V. M. Alves, M. I. R. Benedetto
 Pueri Domus Experimental School, Sao Paulo, Brazil
- DO-03** Using Coupled Harmonic Oscillators to Model Some Greenhouse Gas Molecules
C. K. C. Go
 Department of Physics, Ateneo de Manila University, Quezon City, The Philippines
- DO-04** Fermi Problems in Multidisciplinary Contexts
N. V. Bien¹, A. Müller²
¹Faculty of Physics, National University of Education Hanoi, 136 Xuan Thuy – Cau Giay- Hanoi, Vietnam.
²Institute for Science and science education, Koblenz – Landau University, Fort 7, Landau, Germany
- DO-05** Bionanotechnology for Synthesis of Metal Nanoparticles: A Multidisciplinary Approach of Physics
K. Gaur^{1}, M. S. Gaur², S. Bhadauria³, R. Varshney³*
¹Department of Botany, Government R. D. Girls College, Bharatpur (Raj.) India
²Department of Physics, Hindustan College of Science & Technology, Farah, Mathura (U P) India
³Department of Microbiology, R. B. S. College, Agra (U. P.) India
- DO-06** Force: the Midwife for Transfer of Momentum-The Case of Contact Forces
H. A. Múnera
 International Center for Physics (CIF, Centro Internacional de Física), Edif. Manuel Ancízar, National University of Colombia, Bogotá, Colombia
- DO-07** A Magnetic Set-Up to Help Support Students' Conception of Newton's Second Law
T. Sujarittham¹, K. Arayathanitkul², N. Emarat², J. Tanamatayarat²
¹Institute for Innovative Learning (formerly Institute for Innovation and Development of Learning Process), Mahidol University, Rama VI Rd, Bangkok, 10400, Thailand
² Department of Physics, Faculty of Science, Mahidol University, Rama VI Rd, Bangkok, 10400, Thailand
- DO-08** Ripple Tank: The Surface Tension of Water
*T. Eadkhong, S. Danworaphong**
 Molecular Technology Research Unit, School of Science, Walailak University, Nakhon Si Thammarat 80160, Thailand
- DO-09** The Distance Undergraduate Physics Course of Federal University of Ceara
E. F. Nobre^{1}, N. Barone², F. H. L. Vasconcelos², L. C. Braga²*
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²Virtual Institute of Federal University of Ceara, Campus Pici, Fortaleza, Ce, Brazil

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- DO-10** Intelligent Agents in Physics Education
D. Sánchez-Guzmán, C. Mora
¹Centro de Investigación en Ciencia Aplicada y Tecnología Avanzada, Instituto Politécnico Nacional, Av. Legaria # 694. Irrigación, Miguel Hidalgo, CP 11500, México D. F.
- DO-11** Renewing Physics Education by Integrating Computer-based Technologies In Teaching-Learning Physics
R. Abhang
¹MES Abasaheb Garware College, Pune 411004, India
- DO-12** Solar Heater Project in Undergraduate Physics
N. V. Bien
 Faculty of Physics, National University of Education Hanoi, 136 Xuan Thuy – Cau Giay-Hanoi, Vietnam
- DO-13** Views on Environmental Concerns of University Graduate Students
M. A. B. Lubrica, J. V. Lubrica*
 Department of Mathematics-Physics-Statistics, Benguet State University, La Trinidad, Benguet, Republic of the Philippines
- DO-14** Teaching Physics and Chemistry in Denmark
E. Andersen
 Naturfagskurser, Rådmand Steins Alle 7, st, th DK 2000 Frederiksberg, Denmark

Poster Presentations

Section A: Bringing physics education into the 21st century

- AP-01** Vision of the Academic Community of Science and Physics Concepts at High School
J. A. Mayo¹, M. Irfan², K. Khan³
¹Govt. Adamjee Science College, Karachi, Pakistan
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- AP-02** New Policy on Education in India
N. Iqbal¹, M.S.Khan²
¹Department of Physics, Kashmir University, Srinagar 19006, India
²Department of Physics, Kashmir University, Srinagar 19006, India
- AP-03** Constructing a Solar Heater of Low Cost with Students of High School
C.B. Silva¹, C. Nogueira¹, V. Krüger^{2}*
¹CAVG, Universidade Federal de Pelotas, Av. Ildefonso Simões Lopes, 2971 - 96060290 , Pelotas - RS, Brazil
²FAE, Universidade Federal de Pelotas, Rua Alberto Rosa, 154 - 96101770, Pelotas - RS, Brazil
- AP-04** Eolic Energy: a Thematic Alternative to Approach Concepts about Electromagnetism
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²CAVG, Universidade Federal de Pelotas, Av. Ildefonso Simões Lopes, 2971 - 96060290 , Pelotas - RS, Brazil
- AP-05** Curriculum Process in Science Education
V. Adamčíková¹, P. Tarábek²
¹Educational Publisher Didaktis, Bratislava, Slovak Republic – member of the European Educational Publishers Group, Hasselager, Denmark
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- AP-06** Experimental Education of Vacuum Science by Al-Evaporation
H. Kezuka
 School of Computer Science, Tokyo University of Technology, 1404-1Katakura, Hachioji, Tokyo
 192-0982, Japan
- AP-07** Making Content and Teaching the Self- Assembly in Nano-Science
M. Nikamal, F. Ahmadi , M. Ghasemi, M. Ahmadi*
 Department of Physics, Shahid Rajaei University, Tehran, Iran
- AP-08** Evaluation and Content Analysis of Physics Textbook (1)
N.Sarikhani, F.Ahmadi, M.R.Emamjomeh
 Department of Physics, Shahid Rajaei University, Tehran, Iran
- AP-09** Probing Indigenous Knowledge Related to Physics Concepts Amongst Senior Citizens in
 Chokwé , Mozambique
A.M. Baquete¹, D. Grayson², I.V. Mutimucuo^{3}*
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²Faculty of Engineering, Built Environment and Information Technology, Room 6-8, Engineering
 Building 1, University of Pretoria, Pretoria 0002
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- AP-10** Middle School Science Laboratory
B. Danese¹, F. Logiurato²
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²Dipartimento di Fisica, Università di Trento, 38050 Povo (Trento), Italy
- AP-11** Physics Education and Health Challenges in Kenya
G. Nyabade
 Go Fishnet Youth Project
- AP-12** Science Education Vehicle Project to Popularise Science Among Students Youth and
 Community
V. C. Verekar
 The Progress High School Sanquelim Goa India 403505
- AP-13** Processes and Instructions Encouraging Students to Consistently Pass the First Round of the
 National Physics Academics Olympiads
C.Teevasuthornsakul¹, A. Manosuttirit², C.Suwanno³
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³Independent Researcher

Section B: Engaging physics education to the real world

- BP-01** Physics Education with the Help of Designing
R.Mirkarimi¹, F. Ahmadi², Z. Ahmadi²
¹Dep. Of Art, Faculty of Humanities, Rodehen University, Tehran, Iran
²Dep. Of Physics, Faculty of Science, Shahid Rajaei University, Lavizan, Tehran, Iran
- BP-02** Training physics teachers with active learning methodologies
C. Mora, D. S. Guzmán
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 Av. Legaria # 694. Irrigación, Miguel Hidalgo, CP 11500, México D. F.

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- BP-03** Teaching basic statistical concepts by physics
R. Jalali, F. Ahmadi, M. Moradic
 Department of Physics, Shahid Rajaee University, Tehran, Iran
- BP-04** The Effectiveness of Problem Solving Method in Academic Achievement of Second Grade High School Students in the Physics Topic of Dynamics
F. Ahmadi¹, F. Hamidi², A. Mohammadzadeh, M. Ahmadi
¹Department of Physics, Shahid Rajaee University, Tehran, Iran.
²Department of Education, Shahid Rajaee University, Tehran, Iran.
- BP-05** The Education of the Components of the Magnetic Field of the Earth
E. Rezaei, F. Ahmadi*
 Department of Physics, Shahid Rajaee University, Tehran, Iran.
- BP-06** Pros and Cons of Mathematical Speculations
R. P. K. C. M. Ranasinghe
 Department of Mathematics, University of Sri Jayewardenepura, Sri Lanka
- BP-07** Transfer of Problem Solving Skills between Mathematics and Physics
R. P. K. C. M. Ranasinghe
 Department of Mathematics, University of Sri Jayewardenepura, Sri Lanka
- BP-08** A New Approach to Physics Teacher Training in Iran Based on e-learning
A. Ahmadi, M. R. Merati
 Ministry of Education, Organization for Educational Research and Planning, Iran
- BP-09** Role of Open Educational Resources in Physics learning: An outcome of OER4S Project
*A. Gupta, S. C. Agarkar **
 Homi Bhabha Centre for Science Education, Tata Institute of Fundamental Research, Mankhurd,
 Mumbai-400088 INDIA

Section C: Developing new and effective learning approaches for physics education

- CP-01** A Novel Experimental Apparatus (PDL) and its Application in Higher Education in Japan and Cambodia
K. Sou¹, T. Kato², K. Oto¹, T. Sakurai¹, K. Yamamoto³, K. Tozaki^{2}*
¹Department of Physics, Graduate School of Science, Chiba University, Inage, Chiba, 263-8522, Japan
²Faculty of Education, Chiba University, Inage, Chiba, 263-8522, Japan
³Department of Nanomaterial Science, Graduate School of Advanced Integration Science, Chiba University, Inage, Chiba, 263-8522, Japan
- CP-02** Polymer Nanotechnology: Emerging Industrial Applications
M S Gaur, R. K. Tiwari
 Department of Physics, Hindustan College of Science and Technology, Farah, Mathura (U.P.)-India
- CP-03** Development of Modified Scanning Monochromator for Undergraduate Laboratory
D. Kim, S. Lee
 Department of Physics Education, Seoul National University, Seoul, Republic of Korea
- CP-04** Analysis of Light Source Characteristics Using Fourier Transforms of Interferogram
Y. Kang, S. Lee
 Department of Physics Education, Seoul National University, Seoul, Republic of Korea

- CP-05** Frictionless Demonstration Using Fine Plastic Beads for Teaching Mechanics
K. Ishii¹, K. Kagawa¹, A. Khumaeni², K. H. Kurniawan³
¹Faculty of Education and Regional Studies, University of Fukui, Fukui, 910-8507, Japan
²Graduate school of Nuclear Power and Energy Safety Engineering, University of Fukui, Fukui, 910-8507, Japan
³Research Center of Maju Makmur Mandiri Foundation, 40, Srengseng Raya, Kembangan, Jakarta Barat 11630, Indonesia
- CP-06** Concept Mapping Based on the Cognitive Architecture of Concepts
P. Tarábek
 Educational Publisher Didaktis – member of the European Educational Publishers Group, Hasselager, Denmark & Curriculum Studies Research Group – College of Applied Economical Studies, Czech Republic
- CP-07** Experimental physics education for liberal arts students using Personal Desk Lab (PDL)
K. Yamamoto¹, K. Tozaki², T. Kato², K. Oto³, T. Sakurai³, Y. Kohori³, Y. Watabe⁴, H. N. Takaya⁴, T. Nakayama³
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³Department of Physics, Graduate School of Science, Chiba University, Inage, Chiba, 263-8522, Japan
⁴Center for General Education, Chiba University, Inage, Chiba, 263-8522, Japan
- CP-08** Models and Understanding of Quantum Physics Concepts
N. Didiş, A. Eryılmaz
 Department of Secondary Science and Mathematics Education, Middle East Technical University, Ankara 06531, Turkey
- CP-09** Contact Angle Measurement and Its Importance In Surface Characterization
D.P. Subedi
 Department of Natural Sciences, School of Science, Kathmandu University, Dhulikhel, Kavre, Nepal
- CP-10** Development of Thermodynamic Conceptual Evaluation
*P. Taleab, P. Wattanakasiwich**
 Department of Physics and Materials Science, Chiang Mai University, Chiang Mai 50200, Thailand
- CP-11** Some Findings of Research on the Effect of Computer-Based Techniques on Physics Education
R. Abhang
 MES Abasaheb Garware College, Pune 411004, India
- CP-12** A Rasch Analysis of the Student Evaluation of Physics, Mathematics and Statistics Faculty Members
J. V. Lubrica, M. A. B. Lubrica*
 Department of Mathematics-Physics-Statistics, Benguet State University, La Trinidad, Benguet, Republic of the Philippines
- CP-13** Demonstrating Penetration of Electric Vector of Incident Beam into Rarer Medium during Total Internal Reflection
V. Aggarwal¹, S. Kumar²
¹C-536, Saraswati Vihar, Delhi-110034, INDIA
²Delhi Public School, Dwarka Sector-3, Delhi-110075, INDIA
- CP-14** Categorization of Frequently Made Errors by Introductory Physics Students
A. Houaria, A. Benosman*
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- CP-15** Study of Three Levels of Non-Physics Specialized University Physics Teaching
Q. Wanying
 Department of Physics, East China Jiaotong University, Nanchang 330013, China
- CP-16** On the Conceptual understanding of 'WORK DONE' for Secondary One Students in Singapore
S. K. Munirah¹, S. K. Foong², P. Lee², C. C. Lim¹
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²Natural Sciences and Science Education, National Institute of Education, Nanyang Technological University, Singapore
- CP-17** Peer Instruction at Japanese High School Physics
H. Takahashia, M. Kaneta, H. Nitta*
 Tokyo Gakugei University, 4-1-1 Nukuikita-Machi, Koganei, Tokyo 184-8501, Japan
- CP-18** Practical Use of Review Test in Elementary Course of Physics in University
Y. Anada
 Faculty of Business Administration and Information Science, Hokkaido Information University, 59-2 Nishi-Nopporo, Ebetsu 069-8585, Japan
- CP-19** Physical Properties and Evolution of the Eclipsing Binary System XZ Canis Minoris
R. Poochaum¹, S. Komonjinda¹, S. Rattanasoon²
¹Department of Physics and Materials Science, Faculty of Science, Chiang Mai University, Chiang Mai 50200, Thailand
²National Astronomical Research Institute of Thailand (Public Organization), Ministry of Science and Technology, Thailand
- CP-20** Advancing Physics Learning Through Understanding Errors
S. Jain^{1}, G. Sahasrabudhe², S. Sole³*
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- CP-21** Text2teach: Enhancing Physics Teaching and Learning
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²Department of Physics & Mathematics, College of Arts and Sciences, Central Philippine University, Jaro, Iloilo City, Philippines
- CP-22** Study Support based on Student Karte for the core curriculum
*M. Kanenaga *, Y. Ohfuti, K. Abe, M. Suzuki*
 Department of Applied Physics and Chemistry, The University of Electro-Communications, 1-5-1 Chofugaoka, Chofu-shi, Tokyo 182-8585, Japan
- CP-23** Physics of Waves with Google Earth©
F. Logiurato¹, B. Danese²
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- CP-24** Renewing Physics Education by Incorporating the Multimedia Technology for the Distance Teaching into Presence Physics Courses
E. F. Nobre,^{1} T. F. Vasconcelos¹, F. H. L. Vasconcelos²*
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- CP-25** Hands-on activity in combination with learning management system for enhancing introductory astronomy
C. Ruangsuwan
 Department of Physics, Khon Kaen University, Khon Kaen 40002, Thailand
- CP-26** Pre-Service Physics Teachers' Ideas about Effectiveness of Physics Software
A. Azar¹, N. Didiş², Ö. Oktay², Ö. Özcan³,
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³Department of Secondary Science and Mathematics Education, Hacettepe University, Ankara 06800, Turkey
- CP-27** Proposal of Experiments for Students by Use of Digital Storage Oscilloscope with A/D Converter
T.Ogihara, K.Mishima, M.Tomita
 Department of General Science, School of Veterinary Medicine, Azabu University, 1-17-71 Fuchinobe, Sagami-hara, Kanagawa 229-8501, Japan
- CP-28** Virtual Instrumentation in Engineering Physics Course
*C. B. Bha, U. N. Trivedi**
 Department of Instrumentation & Control, Vishwakarma Government Engineering College, Chandkheda, Ahmedabad – 382424, India
- CP-29** Role of Computers, Networking and Communication in the Physics Education
R.K. Upadhyay^{1}, D.P. Bhatt¹, M. Riyal¹, K.C. Juglan²*
¹Department of Physics, Government P.G. College, RISHIKESH, Dist. Dehradun (Uttaranchal) – 249 201 India
²Department of Physics, Lovely Professional University, Jalandhar (India)
- CP-30** Teaching Physics with Basketball
*N. Chanpichai, P. Wattanakasiwich**
 Department of Physics and Materials Science, Chiang Mai University, Chiang Mai 50200, Thailand
- CP-31** Improving Teaching and Learning Physics by Using international ICT Resources.....**Error! Bookmark not defined.**
R. K. Boroujeni
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- CP-32** Impact of Real, Virtual and Comprehensive Experimentation on Students' Conceptual Understanding of DC Electric Circuits and their Skills in Undergraduate Electricity Laboratory
A. E. Pour¹, M. R. Farrokhnia²
¹Science Faculty, Shahid Rajaei Teacher Training University, Tehran, Iran
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Section D: Preparing physics education to provide solutions to global challenges

- DP-01** Hertz Electric Dipole as a Tool to Explain Concepts in Electrodynamics
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¹International Center for Physics (CIF, Centro Internacional de Física), Edif. Manuel Ancizar,
 Universidad Nacional de Colombia, Bogotá, Colombia
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- DP-02** Ferromagnetism in Doped ZnO
R.M. Ibrahim¹, H.J. Blythe², A.J. Behan², J.R. Neal², G.A. Gehring², A.M. Fox², X.H. Xu³
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 11115, Sudan
²Department of Physics and Astronomy, University of Sheffield, Sheffield, S3 7RH, UK
³School of Chemistry and Materials Science, Shanxi Normal University, Linfen 041004, Shanxi,
 P. R. China
- DP-03** The Role of the Statistics in Improvement of a Physics Teacher's Function
R. Jalali^{}, F. Ahmadi*
 Department of Physics, Shahid Rajaee University, Tehran, Iran
- DP-04** The Elementary Teaching of String Theory
A. Chamani^{1,2}, F. Ahmadi³
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²Physics Development, Faculty of Sciences, Ferdowsi University, Mashhad 91775, Iran
³Department of Physics, Shahid Rajaee University, Lavizan, Tehran 16788, Iran
- DP-05** Analyzing Multiple-Choice Questions by Model Analysis and Item Response Curves
P. Wattanakasiwich^{}, S. Ananta*
 Department of Physics and Materials Science, Chiang Mai University, Chiang Mai 50200, Thailand
- DP-06** Modern and Easy Way in Study the Metal Sphere Falling through Viscous Liquid Experiment
 from Stoke's Law
C. Thawornthiraa, A. Jantaprom
 Department of Physics, Faculty of Science, Burapha University, Chon Buri 20130, Thailand
- DP-07** Loop-the-Loop..... **Error! Bookmark not defined.**
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