NATO Advanced Study Institutes in Nanophotonics: Personal experience

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Photonics: making use of light and light – matter interaction

Photonics milestones:



Gaponenko and Demir, Applied Nanophotonics, Cambridge 2018



Photonics

TOP NATIONS

Top 20 Overall <u>Total cites</u> <u>Number of papers</u> Cites per paper Ranked by cites per paper 1992-2002				
Rank	Nation	Total Cites	Number of Papers	Cites Per Paper
1	CANADA	1785	125	14.28
2	BYELARUS	340	24	14.17
3	NETHERLANDS	1111	80	13.89
4	SWITZERLAND	876	72	12.17
5	TURKEY	348	30	11.6
6	USA	12810	1111	11.53
7	SCOTLAND	1184	107	11.07
8	ENGLAND	2646	243	10.89
9	GREECE	316	34	9.29
10	SPAIN	814	88	9.25
11	INDIA	211	23	9.17
12	GERMANY	2004	222	9.03
13	RUSSIA	1268	172	7.37
14	FRANCE	2332	318	7.33
15	ISRAEL	243	36	6.75
16	AUSTRALIA	419	74	5.66
17	JAPAN	3372	599	5.63
18	DENMARK	188	36	5.22
19	ITALY	505	109	4.63
20	SOUTH KOREA	289	70	4.13

ESI Special Topic of: "Photonics," Published March 2003 Search Special Topics Photonics Menu || All Topics Menu Help || About || Contact

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Nanophotonics studies light-matter interactions on a nanoscale and makes use of the light wave confinement and electron confinement phenomena in nanostructures to create novel and improve existing devices (light-emitting diodes, laser diodes, solid-state lasers, solar cells and optical communication circuitry).



Cambridge University Press 2010 450 pp.



Cambridge University Press 2018 440 pp.

Proceedings of the NATO Advanced Research Workshop on Towards the First Silicon Laser Trento, Italy 21–26 September 2002

Advanced Research Workshops (ARW) are expert meetings where an intense but informal exchange of views at the frontiers of a subject aims at identifying directions for future action

G. Yablonskii, S. Gaponenko, L. Pavesi, G. Ryabtsev





ARW is like a brainstorm

2 Editions: 2003 and 2012 years

OF TRENTO



Lorenzo Pavesi

Full professor
Department of Physics

Expertise:Integrated opticsNanocrystalOptical devicesOptical materialsOpticalQuantum opticsSensorsSilicon photon



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Luca Dal Negro

Department of Electrical and Computer Engineering

Education PhD, University of Trento, Italy, 2003

Additional Affiliations
Division of Materials Science & Engineering
Physics Department
Photonics Center

Honors and Awards Fellow, Optical Society of America, 2018 NSF CAREER Award, 2009



About 50 participants, most were fully supported from NATO for Peace Program including travelling 4 participants from Belarus

+ Notes

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NATO ADVANCED STUDY INSTITUTE 2008 LASER CONTROL & MONITORING IN NEW MATERIALS, BIOMEDICINE, ENVIRONMENT, SECURITY & DEFENSE

November 24th to December 5th, 2008. Ottawa, Canada

Advanced Study Institute Co-Directors:

Professor Dr. Trevor J Hall Director of the Centre for Research in Photonics University of Ottawa **Dr. Sergey V. Gaponenko** B. I. Stepanov Institute of Physics National Academy of Sciences of Belarus

Advanced Study Institutes (ASI) are high-level tutorial courses intended to convey the latest developments in a subject to an advanced-level audience

About 20 high-rank tutors-lecturers, about 80 participants with lower experience in the field

ASI is like scientific school and conference simultaneously. Tutors give 2-3 hrs lectures. "Students" make short oral presentations and posters. Knowledge exchange and transfer, personal interactions, generation of novel ideas.



Professor Trevor Hall University of Ottawa

NATO Science for Peace and Security Series - B: Physics and Biophysics

Extreme Photonics & Applications

Edited by Trevor J. Hall Sergey V. Gaponenko





ETTORE MAJORANA FOUNDATION AND CENTRE FOR SCIENTIFIC CULTURE INTERNATIONAL SCHOOL OF ATOMIC AND MOLECULAR SPECTROSCOPY

Light-matter Interactions towards the Nanoscale

a NATO Advanced Study Institute on Nanophotonics

John Collins and Sergey Gaponenko Directors of the Course

>60 participantsHigh research spiritFriendly atmosphere



Erice, Sicily, Italy July 20 - August 4, 2019

Nano-Structures and Nano-Optics <u>Lukas Novotny</u>, ETH, Zurich, SWITZERLAND

Nano-Plasmonic Whispering Gallery Mode Hybrid Sensors <u>Stephen Arnold</u>, New York University, New York, NY, USA

Terahertz Light-Matter Interactions at the Nanoscale John Bowen, University of Reading, Reading, UK

3D Laser Nano-Printing <u>Martin Wegener</u>, Karlsruhe Institute of Technology, Karlsruhe, GERMANY

Symmetry in Light-Matter Interactions Ivan Fernando-Corbaton, Karlsruhe Institute of Technology, Karlsruhe, GERMANY

Time Reversal Symmetry, Nonreciprocity and Topology in Photonics <u>Mário Silveirinha</u>, Technical University of Lisbon, Lisbon, PORTUGAL

Plasmonic Effects on Photonic Processes and Devices Sergey Gaponenko, National Academy of Sciences, Minsk, BELARUS



Near-zero Index Metamaterials <u>Clayton DeVault and Eric Mazur</u>, Harvard University, Cambridge, MA, USA

Integrated Quantum-Optical Chips Wolfram Pernice, University of Münster, Münster, GERMANY

Workshop in Computational Nanophotonics <u>Lora Ramunno</u>, University of Ottawa, Ottawa, CANADA

Metamaterials <u>Ekaterina Shamonina</u>, Oxford University, Oxford, UK

Ultrafast and Strong-Field Optics <u>Mark I. Stockman</u>, Georgia State University, Atlanta, GA, USA

Surface-Plasmon Mediated Decay Processes of Ions John Collins, Wheaton College, Norton, MA, USA

Fluorescence Nanoscopy from Ensemble to Single Molecule Ilaria Testa, KTH, Stockholm, SWEDEN