

IOAN DANCUS

Phone: +40 755 094 923
ioan.dancus@eli-np.ro

30 Reactorului Street,
077125 Magurele, Ilfov county, Romania

EDUCATION

- | | | |
|------------|--|------|
| PhD | University of Bucharest, Faculty of Physics
Dissertation: “Nonlinear optics in nano-structures”
coordinator Acad. Prof. V. I. Vlad
“Cum laude” level of distinction | 2011 |
| BS | University of Bucharest, Faculty of Physics
“Optics, Spectroscopy, Plasma and Laser Active Media” | 2002 |
| HSG | “Dragos Voda” Theoretical High School, Sighetul Marmatiei, Maramures
“Informatics class” | 1998 |

RESEARCH EXPERIENCE

Horia Hulubei - National Institute for Physics and Nuclear Engineering Extreme Light Infrastructure - Nuclear Physics

Magurele, Romania 2019 to present

Head of Laser Systems Department

- Coordinating the activities of the Laser System Department and the interaction between the Operation, Infrastructure, Scientific and Optics Lab groups that are forming this department
- Coordinating the activity for the implementation and operation of the 10PW laser system and the delivery of the laser pulses to the experimental areas

Horia Hulubei - National Institute for Physics and Nuclear Engineering Extreme Light Infrastructure - Nuclear Physics

Magurele, Romania 2018 to 2019

Head of Research Activity 1 - High Power Laser System

- Coordinating the activities for the implementation and operation of the 10PW laser system and the high-power laser beam transport system

Horia Hulubei - National Institute for Physics and Nuclear Engineering Extreme Light Infrastructure - Nuclear Physics

Magurele, Romania 2013 to 2018

Research scientist, Research Activity 1 - High Power Laser System

- Participant in the construction of the facility and in the development of the TDR

National Institute for Laser Plasma & Radiation Physics (INFLPR),

Magurele, Romania 2013 to 2015

Head of 1PW Laser operation team, CETAL

- Coordinating the operational activities of the 1PW laser

National Institute for Laser Plasma & Radiation Physics (INFLPR),

Magurele, Romania

2006 to 2013

Research scientist, Nonlinear and Information Optics Group

- Participant in multiple projects in the field of nonlinear optics

TEACHING EXPERIENCE

University “Politehnica”, Bucharest, Romania

2015 to present

Associate Professor, Faculty of Applied Science

- IALA, Master Program,
- Course title: Engineering and application of High-Power Lasers (half semester)

Associate Professor, Faculty of Mechatronics

- IMentELI, Master Program,
- Course title: Lasers physics and technology (one semester)

West University of Timisoara, Timisoara, Romania

2015 to present

Associate Professor, Faculty of Physics

- Physics of crystalline materials, Master Program,
- Course title: Extreme light (one semester)

PUBLICATIONS

Journal Publications

- T S. Georgescu, **I. Dancus**, D Ursescu, “Free space variable optical attenuator using frustrated total internal reflection with 70 dB dynamic range”, *Applied Optics* 57(34), p9922-9928 (2018)
- S Gales, KA Tanaka, DL Balabanski, F Negoita, D Stutman, O Tesileanu, CA Ur, D Ursescu, I Andrei, S Ataman, MO Cernaianu, L D’Alessi, **I. Dancus**, B Diaconescu, N Djourelou, D Filipescu, P Ghenuche, DG Ghita, C Matei, K Seto, M Zeng, NV Zamfir, “The extreme light infrastructure—nuclear physics (ELI-NP) facility: new horizons in physics with 10 PW ultra-intense lasers and 20 MeV brilliant gamma beams”, *Reports on Progress in Physics*, 81(9), p094301 (2018)
- Daniel Ursescu, G Cheriaux, P Audebert, M Kalashnikov, T Toncian, M Cerchez, M Kaluza, G Paulus, G Priebe, R Dabu, MO Cernaianu, M Dinescu, T Asavei, **I. Dancus**, L Neagu, A Boianu, C Hooker, C Barty, C Haefner, “Laser beam delivery at ELI-NP”, *Romanian Reports in Physics* 68 (Supple) (2016)
- F Negoita, M Roth, Peter G Thirolf, S Tudisco, F Hannachi, S Moustazis, I Pomerantz, P McKenna, J Fuchs, K Sphor, G Acbas, A Anzalone, P Audebert, S Balascuta, F Cappuzzello, MO Cernaianu, S Chen, **I. Dancus**, R Freeman, H Geissel, P Genuche, LA Gizzi, F Gobet, G Gosselin, M Gugiu, DP Higginson, E d’Humieres, C Ivan, D Jaroszynski, S Kar, L Lamia, V Leca, L Neagu, G Lanzalone, V Meot, SR Mirfayzi, IO Mitu, P Morel, C Murphy, C Petcu, H Petrascu, C Petrone, P Raczka, M Risca, F Rotaru, JJ Santos, D Schumacher, D Stutman, M Tarisien, M Tataru, B Tatulea, Ion Cristian Edmond Turcu, M Versteegen, D Ursescu, S Gales,

NV Zamfir, “Laser driven nuclear physics at ELI–NP”, Romanian Reports in Physics 68 (Supple) (2016)

- ICE Turcu, C Murphy, F Negoita, D Stutman, M Zepf, J Schreiber, C Harvey, RJ Gray, M Toma, S Balascuta, G Sarri, JG Kirk, CH Keitel, JP Palastro, NV Zamfir, MC Kaluza, B Dromey, AGR Thomas, F Karbstein, B Ersfeld, M Risca, G Acbas, SR Yoffe, **I. Dancus**, H Gies, A Noble, DA Jaroszynski, E D'Humieres, MO Cernaianu, R Capdessus, SPD Mangles, MV Tataru, B Hafizi, A Di Piazza, A Boianu, DF Gordon, D Neely, D Kaganovich, C Petcu, GG Paulus, CP Ridgers, S Gales, P Mckenna, M Marklund, E Brunetti, P Ghenuche, A Ilderton, D Ursescu, “High field physics and QED experiments at ELI-NP”, Romanian Reports in Physics 68 (Supple) (2016)
- MO Cernaianu, B De Boisdeffre, D Ursescu, F Negoita, CA Ur, O Tesileanu, D Balabanski, T Ivanoaica, M Ciubancan, M Toma, **I. Dancus**, S Gales, “Monitoring and control systems for experiments at ELI-NP”, Romanian Reports in Physics 68 (Supple) (2016)
- **I. Dancus**, S.T. Popescu, A. Petris, “Single shot interferometric method for measuring the nonlinear refractive index”, Optics Express, Vol. 21, Issue 25, pp. 31303-31308 (2013)
- **I. Dancus**, V. I. Vlad, A. Petris, T. Bazaru Rujoiu, I. Rau, F. Kajzar, A. Meghea, A. Tane, “Z-Scan and I-Scan methods for characterization of DNA optical nonlinearities”, Romanian Rep. Phys. 65 (3), 966-978 (2013)
- F.A. Nicolescu, V.V. Jerca , **I. Dancus**, A. Petris, T.V. Nicolescu, I.B. Rau, V.I. Vlad, D.S. Vasilescu, D.M. Vuluga, "Synthesis and characterization of side-chain maleimide-styrene copolymers with new pendant azobenzene moieties", J. Polym. Res. (2010), doi: 10.1007/s10965-010-9501-6
- **I. Dancus**, V.I. Vlad, A. Petris, S. Frunza, T. Beica, I. Zgura, F.A. Nicolescu, V.V. Jerca, D.M. Vuluga, "Low power laser induced optical nonlinearities in organic molecules ", Romanian Rep. Phys. 62 (3), 567-580 (2010)
- V. Barna, V. I. Vlad, A. Petris, **I. Dancus**, T. Bazaru, E.S. Barna, A. De Luca, S. Ferjani, G. Strangi, "Efficient random laser effect in a new dye-nematic liquid crystalline composite ", Romanian Rep. Phys. 62 (3), 444-454 (2010)
- **I. Dancus**, V. I. Vlad, A. Petris, N. Gaponik, V. Lesnyak, A. Eychmuller, “Optical limiting and phase modulation in CdTe nanocrystal devices”, J.Optoelectron.Adv.Mat, Vol. 12, No. 1, January (2010)
- **I. Dancus**, V. I. Vlad, A. Petris, N. Gaponik, V. Lesnyak, A. Eychmuller, “Saturated near-resonant refractive optical nonlinearity in CdTe quantum dots”, Optics Letters, Vol. 35, No. 7, April (2010)
- **I. Dancus**, V. I. Vlad, A. Petris, N. Gaponik, A. Shavel, A. Eychmüller, “Nonlinear optical properties of CdTe QDs near the resonance regime” J.Optoelectron.Adv.Mat., 10, 149 – 151 (2008)

Conference Papers

- M. Masruri, J. Wheeler, **I. Dancus**, R. Fabbri, A. Nazîru, R. Secareanu, D. Ursescu, G. Cojocaru, R. Ungureanu, D. Farinella, M. Pittman, S. Mironov, S. Balascuta, D. Doria, D. Ros, R. Dabu, “Optical Thin Film Compression for Laser Induced Plasma Diagnostics”, CLEO: Science and Innovations (2019)
- B De Boisseffre, M Caragea, **I. Dancus**, D Ursescu, “Images Processing Techniques and Data Analysis Applied to High-Power Laser Systems”, MMEDIA 2019, The Eleventh International Conference on Advances in Multimedia (2019)
- M Masruri, S Balascuta, **I. Dancus**, A Cucoanes, D Ursescu, “Hollow core inhibited coupling fibers design for femtosecond pulse spectral broadening in multipetawatt laser-induced plasma diagnostics”, Lasers and Electro-Optics Pacific Rim (CLEO-PR), (2017)
- O Tesileanu, Th Asavei, **I. Dancus**, S Gales, F Negoita, ICE Turcu, D Ursescu, NV Zamfir, ”Laser-based acceleration for nuclear physics experiments at ELI-NP”, EPJ Web of Conferences (2016)
- F Lureau, S Laux, O Casagrande, O Chalus, PA Duvochelle, S Herriot, C Radier, L Boudjemaa, C Simon-Boisson, R Dabu, **I. Dancus**, D Ursescu, “Design and initial results of 10 PW Laser for ELI-NP”, The European Conference on Lasers and Electro-Optics (2015)
- F Negoita, M Gugiu, H Petrascu, C Petrone, D Pietreanu, J Fuchs, S Chen, D Higginson, L Vassura, F Hannachi, M Tarisien, M Versteegen, P Antici, D Balabanski, S Balascuta, M Cernaianu, **I. Dancus**, S Gales, L Neagu, C Petcu, M Risca, M Toma, E Turcu, D Ursescu, “Perspectives for neutron and gamma spectroscopy in high power laser driven experiments at ELI-NP” , AIP Conference Proceedings 1645, (2015)
- Guillaume Matras, François Lureau, Sébastien Laux, Olivier Casagrande, Christophe Radier, Olivier Chalus, Frédéric Caradec, Laurent Boudjemaa, Christophe A Simon-Boisson, Razvan Dabu, Florin Jipa, Liviu Neagu, **I. Dancus**, Dan Sporea, Constantin Fenic, Constantin Grigoriu, “First Operation above Petawatt with Sub-25”, High Intensity Lasers and High Field Phenomena (2014)
- **I. Dancus**, V.I.Vlad, A.Petris, I. Rau, F.Kajzar, A. Meghea, A. Tane, “Nonlinear optical properties of Rh610 sensitized DNA-CTMA characterized by Z-Scan” Proc. SPIE Vol. 8882 88820D (2013), doi:10.1117/12.2032352;
- Guillaume Matras, François Lureau, Sébastien Laux, Olivier Casagrande, Christophe Radier, Olivier Chalus, Frédéric Caradec, Laurent Boudjemaa, Christophe A Simon-Boisson, Razvan Dabu, Florin Jipa, Liviu Neagu, **I. Dancus**, Constantin Fenic, Constantin Grigoriu, “First sub-25 fs PetaWatt laser system”, CLEO: Science and Innovations, Advanced Solid State Lasers (2013)
- **I. Dancus**, V. I. Vlad, A. Petris, V. Lesnyak, N. Gaponik, A. Eychmuller, “Optical limiting in CdTe nanocrystals embedded in polystyrene”, Proc. SPIE 7469, 74690A (2010)
- **I. Dancus**, V.I. Vlad, A. Petris, V. Lesnyak, N. Gaponik, A. Eychmuller, "Optical limiting in polystyrene embedded nanocrystals", 2010 12th International Conference on Transparent Optical Networks (ICTON), p 1-4, June 27 2010-July 1 (2010), doi: 10.1109/ICTON.2010.5548986

- F. A. Nicolescu, V. V. Jerca, **I. Dancus**, A. Petris, V. I. Vlad, D. S. Vasilescu and D. M. Vuluga, “Side-chain polymers bearing azo-moieties for nonlinear optics” Proc. of SPIE Vol. 7838 78381B-1 (2010)
- **I. Dancus**, V. I. Vlad, A. Petris, N. Gaponik , V. Lesnyak, ” Size dependent nonlinear properties of thiol-capped CdTe QDs”, Lasers and Electro-Optics 2009, ISBN: 978-1-4244-4079-5 (2009)
- Petronela Doia, A. Petris, **I. Dancus**, V. I. Vlad, “Confocal microscopy for visualization and characterization of porous silicon samples”, Proc. SPIE 6785, 67850T (2007)
- **I. Dancus**, A. Petris, Petronela Doia, E. Fazio, V. I. Vlad, “Z-Scan measurement of thermal optical nonlinearities, Proc. SPIE 6785, 67851F (2007)
- V. I. Vlad, A. Petris, V. Babin, N. Ionescu-Pallas, T. Bazaru, Petronela S. Doia, **I. Dancus**, "Optical Nonlinearities in Subwavelength Structures”, Proc.of First Annual Workshop “Advances in Nanophotonics”, Heraklion, Greece (2005)
- T. Bazaru, **I. Dancus**, Petronela S. Doia, A. Petris, V. I. Vlad, ”Multiple-pass Z-Scan for the characterization of the partial transparent nonlinear optical materials“, Proc. SPIE 5581, p. 661 (2004).

PRESENTATIONS AND INVITED LECTURES

Invited talks

- **I. Dancus** on behalf of ELI-NP team, “High Power Laser System and Laser Induced Damage Tests Strategy at ELI-NP”, International Conference on Pacific Rim Laser Damage & Thin Film Physics and Applications (SPIE-PLD/TFPA 2019), Qingdao, China (2019)
- **I. Dancus** on behalf of ELI-NP team, “The ELI-NP High Power Laser System”, TIM, Timisoara, Romania (2019) – *plenary paper*
- **I. Dancus** for the ELI-NP team, “The ELI-NP High Power Laser System”, 19th International Balkan Workshop on Applied Physics, Constanta, Romania (2019)
- **I. Dancus** on behalf of ELI-NP team, “Extreme Light Infrastructure – Nuclear Physics and the High Power Laser System”, ISCP-INDLAS, Alba-Iulia, Romania (2018)
- **I. Dancus** on behalf of ELI-NP team, “Extreme Light Infrastructure – Nuclear Physics”, 3rd International Symposium on High Power Laser Science and Engineering (HPLSE2018), Suzhou, China (2018)
- **I. Dancus** on behalf of ELI-NP team, “Extreme Light Infrastructure – Nuclear Physics”, SPIE/SIOM Pacific Rim Laser Damage 2017, Shanghai, China, (2017) – *plenary paper*
- **I. Dancus** on behalf of ELI-NP team, “ELI-NP Status and Perspectives”, IONS Balvanyos 2017, International OSA Network of Students, Balvanyos, Romania, (2017)
- **I. Dancus**, R. Dabu, M. Masruri, M.O. Cernaianu, B. De Boisseffre, A. Cucoanes, T. Asavei, L. Neagu, A. Boianu, P. Ghenuche, S. Balascuta, M. Bobeica, G. Acbas, M. Gugiu, C. Ivan, T. Ivanoaica, M. Ciubancan, V. Leca, I.O. Mitu, L. D’Alessi, K. Seto, C. Matei, G. Suliman, V. Iancu, M. Tataru, M. Risca, M. Toma, C. Petcu, Z. Yasin, I.C.E. Turcu, F. Negoita, O.

Tesileanu, D. Balabanski, D. Stutman, C.A. Ur, D. Ursescu, S. Gales, N.V. Zamfir, "Extreme Light Infrastructure – Nuclear Physics", Frontiers of nonlinear physics, Nizhny Novgorod, Russia, July 17-23, (2016)

- **I. Dancus**, Daniel Ursescu, Liviu Neagu, Mihail Cernaianu, Theodor Asavei, Razvan Dabu, Ion Morjan, Sydney Gales, N.V. Zamfir, "High power laser system in Romania and laser developments roadmap for ELI-NP" IBWAP 2014, Constanta, Romania (2014)
- **I. Dancus**, S.T. Popescu, A. Petris, "Interferometric measurement of light induced refractive index changes", INDLAS 2014, Bran, Romania (2014)
- **I. Dancus**, D. Ursescu, L. Neagu, M. Cernaianu, T. Asavei, A. Marcu, F. Jipa, I. Nicolae, G. Cojocar, R. Banici, R. Ungureanu, R. Dabu, C. Ticos, M. Ganciu, C. Grigoriu, I. Morjan, S. Gales, N.V. Zamfir, "CETAL 1PW laser system status and laser developments roadmap for ELI-NP" INDLAS 2014, Bran, Romania (2014)
- **I. Dancus**, R. Dabu, D. Ursescu, L. Neagu, F. Jipa, G. Cojocar, R. Banici, R. Ungureanu, C. Grigoriu, D. Sporea, C. Fenic, I. Morjan, G. Matras, F. Lureau, S. Laux, O. Casagrande, C. Radier, O Chalus, F. Caradec, L. Boudjemaa, C. Simon-Boisson, "CETAL PW Laser Facility" First CETAL- Petawatt Workshop, Magurele, Romania (Nov 2013)

Oral Presentations

- **I. Dancus** and B. de Boisdeffre for the ELI-NP team, "The ELI-NP High Power Laser System", 12th International Laser Operations Workshop, Newbury, UK (2019)
- **I. Dancus** on behalf of ELI-NP team, "High Power Laser System at the Extreme Light Infrastructure – Nuclear Physics" South African Institute of Physics annual conference 2017, Stellenbosch, South Africa, (2017)
- **I. Dancus** on behalf of ELI-NP team, "ELI Facility: Status and Future Plans", 11th International Laser Operations Workshop, Rochester, NY, USA, (2017)
- **I. Dancus** and D Ursescu "Using a zero order diffracted beam in compressor for the diagnosis of PW class lasers", ICEL 2015, Bucuresti, Romania, (2015)
- **I. Dancus**, V. I. Vlad, A. Petris, I. Rau, F. Kajzar, A. Meghea, A. Tane, "Nonlinear optical properties of DNA samples characterized by high sensitivity I-Scan", Micro- to Nano-Photonics III - ROMOPTO 2012, Romania (2012)
- **I. Dancus**, V.I. Vlad, A. Petris, F.A. Nicolescu, V.V. Jerca, D.M. Vuluga, S. Frunza, T. Beica, I. Zgura, "Large optical nonlinearities in copolymers with new pendant azobenzene moieties", 13th International Conference on Transparent Optical Networks ICTON, Stockholm, Sweden (2011)
- **I. Dancus**, V.I. Vlad, A. Petris, S.T. Popescu, N. Gaponik, V. Lesnyak, "All - Optical Spatial Light Modulator using CdTe QDs", CLEO/Europe-EQEC, Munich, Germany (2011)
- **I. Dancus**, V.I. Vlad, A. Petris, S.T. Popescu, N. Gaponik, V. Lesnyak, "Control of Laser Beam Profile by Optical Nonlinearities", LAMP Seminar, Winter College on Optics in Imaging Science, Trieste, Italy (2011)

- **I. Dancus**, V.I. Vlad, A. Petris, V. Lesnyak, N. Gaponik, A. Eychmüller, "Optical limiting in polystyrene embedded nanocrystals", 12th International Conference on Transparent Optical Networks and 2nd Annual Conference of COST Action MP0702: Towards Functional Sub-Wavelength Photonic Structures, Munich, Germany (2010)
- **I. Dancus**, V. I. Vlad, A. Petris, N. Gaponik, V. Lesnyak, "Size dependent nonlinear properties of thiol-capped CdTe QDs" CLEO/Europe-EQEC Conference, Munchen (2009)
- **I. Dancus**, V. I. Vlad, A. Petris, N. Gaponik, V. Lesnyak, "Optical limiting and phase modulation in colloidal CdTe nanocrystals" ROMOTO 2009, Sibiu (2009)
- **I. Dancus**, V. I. Vlad, A. Petris, N. Gaponik, V. Lesnyak, "Nonlinear properties of thiol-capped CdTe QD" EOS Annual Meeting, Paris (2008)

PATENTS

I. Dancus, D. Ursescu, "Method and system for generating an ultrashort pulse monitoring beam," Romanian Patent, RO131699 (A4) — 2017-02-28

PROFESSIONAL TRAINING

- 2016 – Advanced Imaging System Design – Zemax Europe Ltd
- 2015 – Optical System Design Using Optic Studio – Zemax Europe Ltd
- 2012-2013 – training stages in the field of High-Power Laser, THALES
- 2010 – Winter College on Optics and Energy, ICTP, Italy – *ICTP Grant*
- 2008 – Winter College on Micro and Nano Photonics for Life Sciences, ICTP, Italy – *ICTP Grant*
- 2007 - Winter College on Fibre Optics, Fibre Lasers and Sensors, ICTP, Trieste, Italy – *ICTP Grant*
- 2007 - International School of Quantum Electronics 44th Course: Advances on Nanophotonics II, PHOREMOST and "Ettore Majorana" Foundation and Center for Science Culture International School of Quantum Electronics – EMFCSC, Erice, Italy – *PHOREMOST Grant*
- 2006 - Summer School on "Photonic Metamaterials: From Micro to Nano Scale", PHOREMOST and "Ettore Majorana" Foundation and Center for Science Culture International School of Quantum Electronics – EMFCSC, Erice, Italy – *PHOREMOST Grant*
- 2005 - Winter College on Optics and Photonics in Nanoscience and Nanotechnology, ICTP, Trieste, Italy – *ICTP Grant*
- 2005 - Summer School DAAD "Trends in Contemporary Optics", Sinaia, Romania – *DAAD Grant*

PROFESSIONAL AFFILIATIONS

The international society for optics and photonics - *SPIE*,
2004 – President of the Romanian SPIE Student Chapter
2007 – Vice-President of The Romanian SPIE Student Chapter
Present – Regular member

The Optical Society - *OSA*,
2012 – Student member
Present – Regular member

Romanian Physical Society - *SRF*,
2013 - Present – Secretary of the Optics and Laser Division

European Physical Society – *EPS*,
2013 – Present – Regular member

PROFESSIONAL SERVICE

Member of the editorial board

- High Power Laser Science and Engineering – Cambridge University Press

Symposium Co-Organizer

- Member of the Scientific Committee of the SPIE Pacific Rim Laser Damage 2019
- Member of the Scientific Committee of the Joint ISCP - INDLAS 2018
- Member in the Organizing Committee of the 7th, 8th, 9th, 10th, International Conference on Optics, “ROMOPTO 2003”, “ROMOPTO 2006”, “ROMOPTO 2009”, “ROMOPTO 2012”

Peer-Reviewed Articles for:

- JOSA B
- Optics Express
- JOAM

LANGUAGES

Romanian: Native Language

English: Advanced Listener, Speaker, Reading and Writing

Italian: Intermediate Listener, Novice Speaker, Reading and Writing

COMPUTER SKILLS

Programming: advanced knowledge of algorithms and programming structures

Applications:

- advanced user of scientific software like Wolfram Mathematica, MathWorks -Matlab, Origin, PTC Mathcad

- advanced user of office software like Microsoft Office

Platforms: Windows – advanced, Linux – beginner

OTHER

PADI Dive Master - Scuba diver

Vice President of Respiro Underwater Research Society