Osip Schwartz

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Fields of research:

- Cooperative emission phenomena
- Sub-diffraction-limited imaging in far field optical microscopy
- Quantum optics and quantum imaging
- Optical properties of nanoparticles, nanoparticles as labels for bio-imaging
- Nonlinear and ultrafast optics and spectroscopy

Education:

2012 Ph.D in Physics
Weizmann Institute of Science, Israel
Advisor: Dr. Dan Oron
Thesis title: Quantum superresolution imaging in fluorescence microscopy

2008 M. Sc. in Physics
Weizmann Institute of Science, Israel
Advisor: Dr. Dan Oron
Thesis title: Nonlinear microscopy with nanoparticles

2004 Bachelor degree in Physics Cum Lauda
Novosibirsk State University, Russia

Awards:

2013	Gad Reshef Memorial Prize
2011	Otto Schwartz Scholarship, Feinberg Graduate School
2010	Adams Fellowship of the Israel Academy of Sciences and Humanities; Best Poster Award, NanoIsrael 2010 conference
2009	Feinberg Graduate School Dean's Prize of Excellence for M.Sc. Students
2005	The Dynasty Foundation fellowship for students in theoretical physics
2004	Budker Fellowship of Budker Institute for Nuclear Physics
2002	Novosibirsk Mayor's stipend; Winner of Novosibirsk Student Olympiad in theoretical mechanics
1999	Winner of All-Russian High School Olympiad in Physics (2nd prize)
1998	Winner of All-Russian High School Olympiad in Physics (2nd prize)

Professional experience:

2011	Teaching Assistant, Feinberg Graduate School
2005-2006	Researcher, Uniscan Ltd, Novosibirsk, Russia
2005-2006	Engineer, Institute of Automation & Electrometry, Russian Academy of Sciences, Novosibirsk
2003-2004	Lab assistant, Budker Institute of Nuclear Physics, Russian Academy of Sciences, Novosibirsk

Publications:

(1) *Quantum superresolution imaging in fluorescence microscopy*
OS, J.M.Levitt, R.Tenne, Z.Deutsch, S.Itzhakov and D.Oron
arXiv:1212.6003

(2) *A present understanding of colloidal quantum dot blinking*
OS and D.Oron
Israel Journal of Chemistry **52**, 11-12 (2012)

(3) *Colloidal Quantum Dots as Saturable Fluorophores*
OS, R.Tenne, J.M.Levitt, Z.Deutsch, S.Itzhakov and D.Oron
ACS Nano **6**, 10 (2012)

(4) *Improved resolution in fluorescence microscopy using quantum correlations*
OS and Dan Oron
Phys. Rev. A **85**, 3 (2012)

(5) *Two-color antibunching from band-gap engineered colloidal semiconductor nanocrystals*
Z.Deutsch, OS, R.Tenne, R.Popovitz-Biro and D. Oron
Nano Letters **12**, 6, 2012

(6) *Shaped two-photon excitation deep inside scattering tissue*
E.Papagiakoumou, A.Begue, B.Leshem, OS, B.S, J.Bradley, D.Oron and V.Emiliani
Nature Photonics, accepted

(7) *Semiconductor quantum dot – inorganic nanotube hybrids*
R. Kreizman, OS, Z. Deutsch, A. Zak, S.R.Cohen, R. Tenne and D. Oron
Phys. Chem. Chem. Phys. **14**, 4271-4275 (2012)

(8) *Vectorial phase retrieval for linear characterization of attosecond pulses*
O.Raz, OS, D.Austin, A.S.Wyatt, A.Schiavi, O.Smirnova, B. Nadler,I.A.Walmsley,

D.Oron and N.Dudovich
Phys. Rev. Lett. **107**, 133902 (2011)

(9) *Shot noise limited characterization of ultraweak femtosecond pulse trains*
OS, O.Raz, O.Katz, N.Dudovich, and D.Oron
Optics Express **19**, 2 (2011)

(10) *Transient fluorescence of the off state in blinking CdSe/CdS/ZnS semiconductor nanocrystals is not governed by auger recombination*
S. Rosen, OS and D. Oron
Phys. Rev. Lett. **104**, 157404 (2010)

(11) *Guanine based biogenic photonic crystal arrays in fish and spiders*
A.Levy-Lior, E.Shimoni, OS, E.Gavish-Regev, D.Oron, G.Oxford, S.Weiner, and L.Addadi
Advanced Functional Materials, **20**, 2 (2010)

(12) *Third harmonic generation in gold nanorods*
OS and D. Oron
Nano Letters 9, 4093 (2009)

(13) *Using variable pupil filters to optimize the resolution in multi-photon and saturable fluorescence confocal microscopy*
OS and D. Oron
Optics Letters **34**, 464 (2009)

(14) *Localized waves in optical systems with periodic dispersion and nonlinearity management*
B.G. Bale, S. Boscolo, OS, and S.K. Turitsyn
Advances in Nonlinear Optics, 181467 (2009)

(15) *Multiple-period dispersion-managed solitons*
OS and S.K. Turitsyn
Phys. Rev. A, **76**, 043819 (2007)

(16) *Accuracy of one-dimensional collision integral in the rigid spheres approximation*
O.V.Belai, OS and D.A.Shapiro
Phys. Rev. A **76**, 012513 (2007)

(17) *Finite Bragg grating synthesis by numerical solution of Hermitian Gel'fand – Levitan – Marchenko equations*
O.V. Belai, L.L. Frumin, E.V. Podivilov, OS and D.A. Shapiro
J.Opt.Soc.Am. B, **23**, 2040 (2006)

(18) *Electron-positron pair production and bremsstrahlung at intermediate energies in the field of heavy atoms*
R.N. Lee, A.I. Milstein, V.M. Strakhovenko and OS
Radiation Physics and Chemistry, **75**, 868 (2006)

(19) *Coulomb corrections to bremsstrahlung in electric field of heavy atom at high energies*
R.N. Lee, A.I. Milstein, V.M. Strakhovenko and OS
Journal of Experimental and Theoretical Physics **100**, 1 (2005)

Conference presentations:

(1) French-Israeli symposium on Nonlinear and Quantum Optics, 2013 (lecture)
Quantum superresolution in fluorescence microscopy

(2) Photonics West 2012, San Francisco (lecture)
Quantum superresolution microscopy

(3) Nanoisrael 2012 (poster)
Fluorescence antibunching microscopy

(4) Gordon Conference on Quantum Science, 2012 (poster)
Quantum superresolution imaging in fluorescence microscopy

(5) Focus on Microscopy 2011, Konstanz (lecture)
Fluorescence antibunching microscopy

(6) Gordon Conference on Lasers in Medicine and Biology, 2010 (poster)
Superresolution imaging of quantum dots by resonant multiphoton fluorescence microscopy

(7) Nanoisrael 2010 (poster)
On the origin of quantum dots blinking

(8) Ultrafast Phenomena 2010 (poster)
Measuring time profiles of ultraweak ultrashort pulses by time domain superresolution

(9) Focus on Microscopy 2009, Krakow (lecture)
Nonlinear Diffraction Limit And One Color Sub-Diffraction-Limited Imaging

(10) French-Israeli symposium on Nonlinear and Quantum Optics, 2009 (poster)
Plasmon enhanced third harmonic generation in gold nanorods