

# Milivoj R. Belić

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## RESUME

### CURRICULUM VITAE

Born in Yugoslavia; educated in Yugoslavia (undergraduate) and USA (graduate).  
Lived 10 years in USA, 5 years in Germany, and 12 years in Qatar.  
Besides mother's tongue, speaks English, German, and various Slavic languages.  
Married, two children, four grandchildren.

### HONORS, AWARDS, FELLOWSHIPS

2015 Al Sraiya Holding Professor, Texas A&M University at Qatar  
2014 Research Team Award, Qatar National Research Fund  
2013 Research Team Excellence Award, Texas A&M University at Qatar  
2012 Research Team Award, Qatar National Research Fund  
2012 Teacher Excellence Award, Class of 2012, Texas A&M University at Qatar  
2011 Grand Award for Scientific Work, Institute of Physics, University of Belgrade, Serbia  
2011 Faculty Research Excellence Award, Texas A&M University at Qatar  
2010 Senior Member, Optical Society of America, USA  
2010 Honorary Professor, Shunde Polytechnic, Guangdong, China  
2004 Galileo Galilei Award, International Commission for Optics, IUPAP  
2004 First Prize Award for Outstanding Scientific Work, Ministry of Science, Yugoslavia  
2001, 1993 Institute of Physics Prize, Yugoslavia  
1986-87 Humboldt Fellow, Max Planck Institute of Quantum Optics Garching, Germany  
1978-79 Graduate Fellow, City University of NY, New York, USA  
1970 IV International Physics Olympiad, Moscow; Yugoslav team member

### EDUCATION

1980 Ph.D. in Physics, The City College of New York (Advisers: J. Gersten and M. Lax)  
1974 B.Sc. in Physics, Belgrade University, Yugoslavia  
1970 Diploma, School of Mathematics, Belgrade, Yugoslavia

### POSITIONS HELD

2015-2018	Al Sraiya Holding Professor, Texas A&M University at Qatar, Doha, Qatar
2009-present	Professor, Texas A&M University at Qatar, Doha, Qatar
2004-09	Senior Associate Professor, Texas A&M University at Qatar, Doha, Qatar
1999-00	Visiting Professor, Institute of Applied Physics, TU Darmstadt, Germany
1996-03	Professor, Institute of Physics, Belgrade, Yugoslavia

1995-96 Visiting Assistant Professor, Texas A&M University, College Station, USA,  
 1988 Assistant Professor, Math and Computer Science, Clarkson Univ., Potsdam  
 1987-96 Associate Professor, Institute of Physics, Belgrade, Yugoslavia  
 1986-87 Humboldt Fellow, MPI fur Quantenoptik, Garching, Germany  
 1982-87 Assistant Professor, Institute of Physics, Belgrade, Yugoslavia  
 1980-81 Research Associate, Optical Sciences Center, University of Arizona, Tucson  
 1978-80 Lecturer in Physics, New York Institute of Technology, NYC  
 1978-79 Graduate Fellow, CUNY, New York  
 1975-80 Adjunct Lecturer/Research Assistant, CCNY, New York

#### VISITING POSITIONS

2003 Optique Nonlineaire Theorique, Universite Libre de Bruxelles, Belgium  
 2002 Institute of Applied Physics, WW University Muenster, Germany  
 2001 Department of Material Physics, Universidad Autonoma de Madrid, Spain  
 1993,4,5,6,7,8 Institute of Applied Physics, TU Darmstadt, Germany  
 1993 Department of Physics, Texas A&M University, College Station  
 1992 Institute of Applied Physics, TH Darmstadt, Germany  
 1991 Institute of Quantum Electronics, ETH Zurich, Switzerland  
 1990 Institute of Optics, Rochester University, Rochester  
 1986 International Centre for Theoretical Physics, Trieste, Italy  
 1984 Department of Physics, The City College of New York, NYC

#### RESEARCH INTERESTS

- Nonlinear optics: Generation of rogue waves,
- Linear optics: Self-accelerating beams,
- Nonlinear photonics: Surface waves, Anderson localization, nanoplasmonics.
- Nonlinear and quantum optics: Wave mixing, spatial solitons, light bullets.
- Mathematical physics: Exact solutions of evolution PDEs: NLS, CGL, GP, Manakov, etc.
- Semiconductor physics: Lasers, waveguides, photonic crystals. Optoelectronics, quantum dots.
- Nonlinear dynamics: Instabilities and chaos, transverse patterns, defects.  
     Amplitude equations, transition to turbulence. Optical and plasma instabilities.
- Solid state physics: Photorefractive materials, effects and devices. Graphene.  
     Band structure of solids and photonic crystals, laser-crystal interactions.
- Computational physics: Computational optics and fluid dynamics.  
     PDE algorithms, spectral beam propagation methods. Numerical chaos, CUDA GPU computing.
- Biophysics: Cooperative behavior of social insects. Dynamics of diseases. Proteomics.

#### MAJOR RESEARCH ACCOMPLISHMENTS

- Development of the original split-step beam propagation method,
- Exact analytical solutions to various two-wave and four-wave mixing arrangements in photorefractive media,
- Demonstration of chaos and optical turbulence in phase conjugate resonators,
- Definition and analysis of working conditions for phase conjugate oscillators,
- Explanation of the spiraling/oscillating behavior of screening spatial solitons in photorefractive crystals,

- Clarification of the local isotropic vs. nonlocal anisotropic modeling of space charge field in photorefractive media,
- Introduction of dynamical counterpropagating vector solitons and waveguides in saturable media,
- Introduction of counterpropagating waveguides in optically induced photonic lattices,
- Demonstration of angular momentum transfer and non-conservation of angular momentum in photonic lattices.
- Analytical wave and solitary solutions to the generalized nonlinear Schrodinger, Gross-Pitaevskii and Ginzburg-Landau equations,
- Discovery of nonlinear Talbot effect in rogue waves.
- Dynamics of rogue wave generation

## PUBLICATIONS

Six books and more than 330 papers in peer-reviewed journals, which attracted more than 3500 citations. h-index: 30; i10-index: 110 (according to Google Scholar). Since 2011 more than 2000 citations; h: 23; i10: 57.

## PROFESSIONAL ACTIVITIES

- 1998-present Editor, Asian J. Phys.
- 2009-2015 Topical Editor, Optics Letters;
- 2014-present Member of Editorial Board, Advances in NL Optics, Hindawi Publishing;
- 2014 Chair, Photonics Middle East Conference 2015
- 2015 Editorial Board, Waves in Engineering, Science and Technology, American Scientific Publishers

## RESEARCH PROJECTS

- 2015-2018 Co-LPI, Project NPRP 8-425-1-087, "Investigation of interactions responsible for amyloid formation in various diseases," QNRF Qatar
- 2015-2018 LPI, Project NPRP 8-028-1-001, "Nonlinear photonics for all-optical information technologies," QNRF Qatar
- 2014-2017 LPI, Project NPRP 7-665-1-125, "Intercalated graphene: Effects of substrates on functionalities," QNRF Qatar
- 2013-2016 LPI, Project NPRP 6-021-1-005, "Self-organized solitonic structures propagating in semiconductor quantum wells, nanocomposites, polymers, photonic crystals, metamaterials and nanoplasmonics for applications in information technology", QNRF Qatar;
- 2012-2015 Co-LPI, Project NPRP 5-674-1-114, "Advanced Higher Order Symplectic Algorithms for the Time-Marching of Numerical Schemes in Computational Physics and Applied Mathematics," QNRF Qatar;
- 2010-2013 LPI, Project NPRP 09-462-1-074 "Light bullets, fractional vortices, nonlocal solitons and surface waves for all-optical information transmission in photonic crystals, optical lattices, dispersion-managed systems, and distributed fibers," QNRF Qatar
- 2008-2011 LPI, Project NPRP 25-6-7-2 "Nonlinear Photonics," QNRF Qatar
- 2008-2011 Co-LPI, Project NPRP 30-6-7-35 "Tracer spectroscopy," QNRF Qatar
- 2006-2010 Group leader, Project OI 141031, Ministry of Science, Technology and Environment Protection, Serbia
- 2002 Principal investigator, "Spatial solitons and pattern formation in photorefractive crystals" (Stability Pact for Southeastern Europe, Alexander von Humboldt Foundation, Germany)

-2002-05 Project coordinator, "Spatial solitons, vortices, and self-organized structures in photorefractive crystals, fusion plasma, and ionosphere"  
(Ministry of Science, Technologies, and Development, Serbia)  
-1996-01 Project coordinator, "Nonlinear optics and the dynamics of plasma"  
(Ministry of Science and Technology, Serbia)  
-1992-98 Foreign guest, Project "Nichtlineare Dynamik"  
(Sonderforschungsbereich 185, Deutsche Forschungsgemeinschaft, Germany)  
-1987-95 Team leader, "Photorefractive Optics"  
(Ministry of Science and Technology, Yugoslavia)  
11987-1990 Project leader, "Transonic Euler Aerodynamics," Team leader  
(Federal Ministry of Defense, Yugoslavia)  
-1986-87 Humboldt project, principal investigator, "Photorefractive Wave Mixing"  
(Alexander von Humboldt Foundation, Germany)  
-1985-86 Project leader, "Transonic Aerodynamic Flows," Team leader  
(Federal Ministry of Defense, Yugoslavia).

#### FUNDING

More than \$7M since 2008.

#### CONFERENCE ORGANIZATION

-2015 Photonics Middle East Conference 2015, Chair, Doha, Qatar  
-2009, 2011, 2013 PHOTONICA International Program Committee, Belgrade, Serbia  
-2007 ISCOM, International Program Committee, Belgrade, Serbia  
-2005 ICOL, International Advisory Committee, Dehradun, India  
-2003 EQEC, Munich, "Nonlinear Optics" Committee Member, Germany  
-1998 Advisory Committee, Silver Jubilee Symposium of the  
Optical Society of India, Dehradun, India  
-1992 Symposium Committee, ICHMT International Symposium on  
Spatio-temporal Structure and Chaos in Heat and Mass Transfer Processes,  
Athens, Greece  
-1991 Program Committee, Topical Meeting on Photorefractive  
Materials, Effects and Devices, Beverly, USA

#### TEACHING, SUPERVISION

Taught numerous courses in physics and math at the City College of New York, New York Institute of Technology, Clarkson University, Texas A&M University, and University of Belgrade. Most recently teaching "Nonlinear phenomena in condensed matter" at the Faculty of Physics, University of Belgrade (graduate course), and "Mechanics", "Electricity, Magnetism, and Optics", and "Modern Physics" at the Texas A&M University at Qatar (undergraduate). Supervised 8 PhD's in Yugoslavia and Serbia, and 3 in Germany.

#### REFEREEING

Phys. Rev. Lett., Phys. Rev. A-B-E, Optics Lett., J. Opt. Soc. Am. B, Opt. Express, etc.

#### ADDENDUM

List of publications.