

Ing. Paolo Bardella, PhD

Dati personali

- Nato a Torino il 19 settembre 1977
- Stato civile: celibe
- Servizio militare: assolto

Formazione

- *Dottorato di Ricerca in Ingegneria Elettronica e delle Comunicazioni*, conseguito presso il Politecnico di Torino. Maggio 2006.
Tesi di dottorato dal titolo “Time Domain Analysis of Semiconductor Lasers”, relatore Prof. I. Montrosset.
- *Laurea in Ingegneria Elettronica, Vecchio Ordinamento*, conseguita presso il Politecnico di Torino, con votazione 110/110 e Lode. Gennaio 2002.
Tesi di laurea dal titolo “Analisi dinamica di laser multi-sezione e multi-elettrodo”, relatore Prof. I. Montrosset.
- *Diploma di Maturità Scientifica*, conseguito presso il Liceo Scientifico Galileo Ferraris di Torino, con votazione 60/60. Luglio 1996.

Esperienze di ricerca

- *Ricercatore Universitario a Tempo Determinato Legge 240/10 art.24-A presso il Politecnico di Torino*
Dal 28 Dicembre 2012.
- *Assegno di Ricerca presso il Politecnico di Torino all'interno dei Progetti Europei Delight e FastDot.*
Dal Gennaio 2009 al Dicembre 2012. La ricerca si concentra sul progetto e la simulazione numerica di dispositivi Laser per telecomunicazioni a basso costo e a elevato bit-rate.
- *Assegno di Ricerca presso il Politecnico di Torino all'interno del Progetto NanoUBs.*
Dal Gennaio 2006 al Dicembre 2008. La ricerca si concentra sul progetto e la simulazione numerica di dispositivi Laser e SLD realizzati con materiali Quantum-Dot.
- *Dottorato presso il Dipartimento di Elettronica del Politecnico di Torino.*
Dal Gennaio 2003 al Dicembre 2005. La ricerca si è concentrata sull'analisi di dispositivi laser a semiconduttore operanti in regime autopulsante e in regime di mode-locking alla frequenza di 40 GHz.
- *Collaborazione con il Politecnico di Torino, Dipartimento di Elettronica, finalizzata alla simulazione numerica di laser a semiconduttore.* Marzo-Ottobre 2002

Attività di ricerca

Pubblicazioni su rivista

- **Bardella P.**, Montrosset I., “*A New Design Procedure for DBR Lasers Exploiting the Photo–Photon Resonance to Achieve Extended Modulation Bandwidth*”, IEEE Journal of Selected Topics in Quantum Electronics, vol. 19, p. 1502408, ISSN 1077-260X, 2013
- Simos H., Rossetti M., Simos C., Mesaritakis C., Xu T., **Bardella P.**, Montrosset I., Syvridis D., “*Numerical Analysis of Passively Mode–Locked Quantum–Dot Lasers With Absorber Section at the Low–Reflectivity Output Facet*”, IEEE Journal of Quantum Electronics, vol. 49 n. 1, pp. 3-10, ISSN 0018-9197, 2013
- Xu T., **Bardella P.**, Montrosset I., “*Quantum Dot Passively Mode-Locked Laser Optimization for High-Power and Short Pulses*”, IEEE Photonics Technology Letters, vol. 25 n. 1, pp. 63-66, ISSN 1041-1135, 2013
- Nikitichev D.I., Ding Y., Cataluna M.A., Rafailov E.U., Drzewietzki L., Breuer S., Elsaesser W., Rossetti M., **Bardella P.**, Xu T., Montrosset I., Krestnikov I., Livshits D., Ruiz M., Tran M., Robert Y., Krakowski M., “*High peak power and sub-picosecond Fourier–limited pulse generation from passively mod–locked monolithic two–section gain–guided tapered InGaAs quantum–dot lasers*”, Laser Physics, vol. 22 n. 4, pp. 715-724, ISSN 1054-660X, 2013
- Xu T., **Bardella P.**, Rossetti M., Montrosset I., “*Beam propagation method simulation and analysis of quantum dot flared semiconductor optical amplifiers in continuous wave high–saturation regime*”, IET Optoelectronics, vol. 6 n. 2, pp. 110-116, ISSN 1751-8768, 2012
- Ding Y., Aviles-Espinosa R., Cataluna M.A., Nikitichev D., Ruiz M., Tran M., Robert Y., Kapsalis A., Simos H., Mesaritakis C., Xu T., **Bardella P.**, Rossetti M., Krestnikov I., Livshits D., Montrosset I., Syvridis D., Krakowski M., Loza-Alvarez P., Rafailov E., “*High peak–power picosecond pulse generation at 1.26 μm using a quantum–dot–based external–cavity mode-locked laser and tapered optical amplifier*”, Optics Express, vol. 20 n. 13, pp. 14308-14320, ISSN 1094-4087, 2012
- Xu T., Rossetti M., **Bardella P.**, Montrosset I., “*Simulation and Analysis of Dynamic Regimes Involving Ground and Excited State Transitions in Quantum Dot Passively Mode–Locked Lasers*”, IEEE Journal of Quantum Electronics, vol. 48 n. 9, pp. 1193-1202, ISSN 0018-9197, 2012
- Ding Y., Alhazime A., Nikitichev D., Fedorova K., Ruiz M., Tran M., Robert Y., Kapsalis A., Simos H., Mesaritakis C., Xu T., **Bardella P.**, Rossetti M., Krestnikov I., Livshits D., Montrosset I., Syvridis D., Cataluna M.A., Krakowski M., Rafailov E., “*Tunable Master-Oscillator Power–Amplifier Based on Chirped Quantum–Dot Structures*”, IEEE Photonics Technology Letters, vol. 24 n. 20, pp. 1841-1844, ISSN 1041-1135, 2012
- Rossetti M., Xu T., **Bardella P.**, Montrosset I., “*Modelling of passive mode–locking in InAs quantum–dot lasers with tapered gain section*”, Physica Status Solidi C, vol. 9 n. 2, pp. 286-289, ISSN 1862-6351, 2011
- Vallone M., **Bardella P.**, Montrosset I., “*Enhanced Modulation bandwidth in Complex Cavity Injection Grating Lasers*”, IEEE Journal of Quantum Electronics, vol. 47 n. 10, 1269 -1276, ISSN 0018-9197, 2011

- Rossetti M., Xu T., **Bardella P.**, Montrosset I., “*Impact of Gain Saturation on Passive Mode Locking Regimes in Quantum Dot Lasers with Straight and Tapered Waveguides*”, IEEE Journal of Quantum Electronics, vol. 47 n. 11, pp. 1404-1413, ISSN 0018-9197, 2011
- Breuer S., Rossetti M., Drzewietzki L., **Bardella P.**, Montrosset I., Elsasser W., “*Joint Experimental and Theoretical Investigations of Two-State Mode Locking in a Strongly Chirped Reverse-Biased Monolithic Quantum Dot Laser*”, IEEE Journal of Quantum Electronics, vol. 47 n. 10, pp. 1320-1329, ISSN 0018-9197, 2011
- Rossetti M., **Bardella P.**, Montrosset I., “*Modeling Passive Mode-Locking in Quantum Dot lasers: a comparison between a Finite Difference Travelling Wave model and a Delayed Differential Equation approach*”, IEEE Journal of Quantum Electronics, vol. 47 n. 5, pp. 569-576, - ISSN 0018-9197, 2011
- Rossetti M., **Bardella P.**, Montrosset I., “*Time-domain Travelling-wave Model for Quantum Dot Passive Mode-locked Lasers*”, IEEE Journal of Quantum Electronics, vol. 47, n. 2, pp. 139-150, ISSN 0018-9197, 2011
- Breuer S., Rossetti M., Elsässer W., **Bardella P.**, Montrosset I., Krakowski M., Hopkinson M., “*Reverse-emission-state-transition mode-locking of a two-section InAs/InGaAs quantum dot laser*”, Applied Physics Letters, vol. 97, n. 7, 071118-1-071118-3, ISSN 0003-6951, 2010
- **Bardella P.**, Rossetti M., Montrosset I., “*Modeling of Broadband Chirped Quantum-Dot Super-Luminescent Diodes*”, IEEE Journal of Selected Topics in Quantum Electronics, vol. 13, p. 785-791, ISSN: 1077-260x, DOI: 10.1109/Jstqe.2009.2013128, 2009
- Blazek M., Elsder W., Hopkinson M., Resneau P., Krakowski M., Rossetti M., **Bardella P.**, Gioannini M., Montrosset I., “*Coherence Function Control of Quantum Dot Superluminescent Light Emitting Diodes by Frequency Selective Optical Feedback*”, Optics Express, vol. 17, p. 13365-13372, ISSN: 1094-4087, 2009
- Rossetti M., **Bardella P.**, Montrosset I., “*Numerical Investigation of Power Tunability in Two-Section QD Superluminescent Diodes*”, Optical and Quantum Electronics, vol. 40, p. 1129-1134, ISSN: 0306-8919, DOI: 10.1007/S11082-009-9307-0, 2008
- **Bardella P.**, Montrosset I., “*Analysis of Self-Pulsating Three-Section DBR Lasers*”, IEEE Journal of Selected Topics in Quantum Electronics, vol. 11, p. 361-366, ISSN: 1077-260x, 2005

Conferenze e workshop internazionali

- Montrosset I., **Bardella P.**, “*Laser Dynamics Providing Enhanced Modulation Bandwidth*”, SPIE Photonics Europe, 9134-16, Bruxelles, 14-17 Aprile 2014
- Gioannini M., Montrosset I., **Bardella P.**, Rossetti M., “*FDTW Approach for Simulation of QD lasers and SOAs*”, International Symposium on Physics and applications of laser dynamics 2013, Parigi, 29-31 Ottobre 2013
- Gioannini M., **Bardella P.**, Montrosset I., “*A Fast Time Domain Travelling Wave method for simulation of Quantum Dot Lasers and Amplifiers*”, Conference on Lasers and Electro-optics (CLEO), Monaco di Baviera, 12-16 Maggio 2013, CB_3.2 MON
- Xu T., **Bardella P.**, Montrosset I., “*Cavity optimization of 1.3um InAs/InGaAs quantum dot passively mode-locked lasers*”, Semiconductor Lasers and Applications V, Pechino, 5-6 Novembre 2012

- Manfredi P., Stievano I.S., Perrone G., **Bardella P.**, Canavero F.G., “*A Statistical Assessment of Opto-Electronic Links*”, 21st IEEE International Conference on Electrical Performance of Electronic Packaging and Systems (EPEPS), Tempe, (USA), 21–24 Ottobre 2012, pp. 61-64
- Ding Y., Cataluna M.A., Nikitichev D.I., Ruiz M., Tran M., Robert Y., Kapsalis A., Simos H., Mesaritakis C., Xu T., **Bardella P.**, Rossetti M., Krestnikov I.L., Livshits D.A., Montrosset I., Syvridis D., Krakowski M., Rafailov E., “*30 W Peak Power Generated from All-quantum-dot Master-oscillator Power-amplifier System for Nonlinear Bio-imaging Applications*”, CLEO: Science and Innovations (CLEO: S and I), San Jose (USA), 6–11 Maggio 2012, CM2J.5(1)-CM2J.5(2)
- **Bardella P.**, Montrosset I., “*Design and simulation of DBR lasers with extended modulation bandwidth exploiting photon-photon resonance effect*”, European Conference on Integrated Optics (ECIO), Sitges (Spagna), 18–20 Aprile 2012
- Rossetti M., Xu T., **Bardella P.**, Montrosset I., “*Influence of the saturable absorber length on the mode locking regimes of two-section quantum-dot lasers: a numerical study*”, 2nd EOS Topical Meeting on Lasers (EOS ETML), Capri, 26–28 Settembre 2011
- Vallone M.E., **Bardella P.**, Montrosset I., “*Numerical Analysis of short-cavity DFB laser for 40 Gb/s transmission*”, 2nd European Optical Society Topical Meeting on Lasers (EOS ETML), Capri, 26–28 Settembre 2011
- Vallone M., **Bardella P.**, Montrosset I., “*Design of high modulation bandwidth DBR lasers exploiting detuned loading and photon-photon resonance effects*”, 2nd European Optical Society Topical Meeting on Lasers (EOS ETML), Capri, 26–28 Settembre 2011
- Afzal S., Schnabel F., Scholz W., Reithmaier J.P., Vallone M., **Bardella P.**, Montrosset I., “*Trench width dependant deeply etched surface-defined InP gratings for low-cost high speed DFB/DBR*”, 37th International Conference on Micro and Nano Engineering (MNE 2011), Berlin, 19–23 Settembre 2011
- Breuer S., Rossetti M., Drzewietzki L., **Bardella P.**, Montrosset I., Hopkinson M., Wolfgang Elsasser W., “*Extended ground-state and excited-state emission-state control in a mode-locked two-section quantum dot laser*”, 13th International Conference on Transparent Optical Networks (ICTON), Stockholm, 26–30 Giugno 2011
- Rossetti M., **Bardella P.**, Xu T., Montrosset I., “*Modeling passive mode-locking in InAs quantum dot lasers with tapered gain sections*”, 38th International Symposium on Compound Semiconductors (ISCS), Berlino, 22–26 Maggio, 2011
- Drzewietzki L., Ruiz M., Breuer S., Tran M., Robert Y., Rossetti M., Xu T., **Bardella P.**, Elsaßer W., Krakowski M., Montrosset I., Krestnikov I., “*Passively mode-locked monolithic two-section gain-guided tapered quantum-dot lasers: I. Ultrashort and stable pulse generation*”, Conference on Lasers and Electro-Optics - European Quantum Electronics Conference (CLEO/EUROPE and EQEC), 22–26 Maggio 2011, Monaco di Baviera
- Nikitichev D.I., Ruiz M., Ding Y., Tran M., Robert Y., Krakowski M., Rossetti M., **Bardella P.**, Montrosset I., Krestnikov I., Livshits D., Cataluna M.A., Rafailov E.U., “*Passively mode-locked monolithic two-section gain-guided tapered quantum-dot lasers: II. Record 15 Watt peak power generation*”, Conference on Lasers and Electro-Optics - European Quantum Electronics Conference (CLEO/EUROPE and EQEC), 22–26 Maggio 2011, Monaco di Baviera

- Ding Y., Alhazime A., Nikitichev D.I., Fedorova K.A., Ruiz M., Tran M., Robert Y., Kapsalis A., Simos H., Mesaritakis C., Xu T., **Bardella P.**, Rossetti M., Krestnikov I.L., Livshits D.A., Montrosset I., Syvridis D., Cataluna M.A., Krakowski M., Rafailov E., “*Tunable Master-Oscillator Power Amplifier Using All Chirped Quantum-Dot Structures*”, Quantum Electronics and Laser Science Conference (QELS), San Jose, California, 6–11 Maggio 2012, JW2A.96(1)-JW2A.96(2)
- Dumitrescu M., Telkkälä J., Karinen J., Viheriälä J., Laakso A., Afzal S., Reithmaier J.-P., Kamp M., Melanen P., Uusimaa P., **Bardella P.**, Vallone M.E., Montrosset I., Parillaud O., Gready D., Eisenstein G., Sek G., “*Development of high-speed directly-modulated DFB and DBR lasers with surface gratings*”, SPIE Novel In-Plane Semiconductor Lasers, San Francisco, 24 Gennaio 2011
- Rossetti M., **Bardella P.**, Montrosset I., “*Modelling passive mode-locking in Quantum-Dot Lasers: a comparison between a Finite-Difference Travelling-Wave model and a Delayed Differential Equation approach*”, High Speed Semiconductor Laser Workshop (HSSL), Wroclaw, 7–8 Ottobre 2010, pp. 29-30
- Vallone M., **Bardella P.**, Montrosset I., “*Enhanced Modulation Bandwidth in CCIG lasers*”, High Speed Semiconductor Laser Workshop (HSSL), Wroclaw, 7–8 Ottobre 2010, pp. 55-56
- Enard A., Resneau P., Calligaro M., Parillaud O., Krakowski M., Vallone M., **Bardella P.**, Montrosset I., “*Mode locking and bandwidth enhancement in single section ridge laser with two spatial modes*”, 22nd IEEE International Semiconductor Laser Conference (ISLC), Kyoto 26–30 Settembre 2010, pp. 113-114
- Breuer S., Rossetti M., Elsässer W., Drzewietzki L., **Bardella P.**, Montrosset I., Hopkinson M., “*Reverse ground-state excited-state emission transition dynamics in two-section quantum dot semiconductor lasers: Simultaneous twostate mode-locking and state-switching via a resistor Self-Electro-optic Effect Device (SEED)*”, 22nd IEEE International Semiconductor Laser Conference (ISLC), Kyoto, 26–30 Settembre 2010, pp. 65–66
- Rossetti M., **Bardella P.**, Montrosset I., “*Simulation and design of high power gain guided quantum dot tapered lasers operating in passive mode-locking regime*”, European Semiconductor Laser Workshop (ESLW), Pavia, 24–25 Settembre 2010
- Breuer S., Rossetti M., Elsässer W., Drzewietzki L., **Bardella P.**, Montrosset I., Krakowski M., Hopkinson M., “*Two-state passive mode-locking of quantum dot semiconductor lasers: Classical state scenario and novel reverse state dynamics*”, 12th International Conference on Transparent Optical Networks (ICTON), Monaco di Baviera, 27giugno – 1 Luglio 2010
- Rossetti M., **Bardella P.**, Montrosset I., “*Modelling differential transmission spectroscopy experiments in quantum dot optical amplifiers and saturable absorbers*”, SPIE Photonics Europe, Brussels, 12–16 Aprile 2010
- Vallone M., **Bardella P.**, Montrosset I., “*Photon-photon resonance enhanced modulation bandwidth in CCIG lasers*”, European Conference on Integrated Optics (ECIO), Cambridge (UK), 7–9 Aprile 2010
- Rossetti M., **Bardella P.**, Montrosset I., Breuer S., Elsaesser W., “*Simulation and design of quantum-dot lasers operating in dual-wavelength passive mode-locking regime*”, European Conference on Integrated Optics (ECIO), Cambridge (UK), 7–9 Aprile 2010

- Rossetti M., **Bardella P.**, Montrosset I., “*A Time-Domain Travelling-Wave Model including Multi-Population Rate-Equations for Passively Mode-Locked Quantum-Dot Lasers*”, 1st European Optical Society (EOS) Topical Meeting in Lasers, Capri, 27–30 Settembre 2009
- Vallone M., **Bardella P.**, Montrosset I., “*Investigation of Broadband Modulation in CCIG Lasers*”, 1st European Optical Society (EOS) Topical Meeting in Lasers, Capri, 27–30 Settembre 2009
- Rossetti M., **Bardella P.**, Montrosset I., “*Modelling Passive Mode-Locking in Quantum-Dot Lasers Using a Finite Difference Travelling-Wave Model with Multi-Population Rate Equations*”, International Nano–Optoelectronics Workshop, Stoccolma e Berlino, 2–15 Agosto 2009
- Resneau P., Enard A., Robert Y., Calligaro M., Krakowski M., Hopkinson M., **Bardella P.**, Gioannini M., Rosetti M., Montrosset I., Blazek M., Elsaesser W., Lynn J., Duffy S., “*High Power Performances of Broad Bandwidths Superluminescent Diodes (SLDs) Based on Chirped-Quantum-Dot Structures Operating at 1100 and 1200 nm for Optical Coherence Tomography (OCT) Applications*”, European Conference On Lasers and Electro-Optics and the XIth European Quantum Electronics Conference (CLEO), Monaco di Baviera, 14–19 Giugno 2009
- Rossetti M., **Bardella P.**, Gioannini M., Montrosset I., “*Time Domain Travelling Wave Model for Simulation of Passive Mode Locking in Semiconductor Quantum Dot Lasers*”, European Conference On Lasers and Electro-Optics and the XIth European Quantum Electronics Conference (CLEO), Monaco di Baviera, 14–19 Giugno 2009
- Rossetti M., **Bardella P.**, Montrosset I., “*SLD with Improved Output Power using a Saturable Absorber*”, European Semiconductor Laser Workshop (ESLW) 2008, Eindhoven, 19–20 Settembre 2008
- Krakowski M., Resnau P., Calligaro P., Hugues M., Hopkinson M., Gioannini M., **Bardella P.**, Montrosset I., “*High Power, Broad Spectral Width, 1300nm Quantum-Dot Superluminescent Diodes*”, IEEE International Semiconductor Laser Conference”, Sorrento, 14–18 Settembre 2008, p. 22–23, DOI: 10.1109/Islc.2008.4635990
- Rossetti M., **Bardella P.**, Montrosset I., “*Numerical Investigation of Power Tunability in Two-Section QD Superluminescent Diodes*”, Numerical Simulation of Optoelectronic Devices (NUSOD) 2008, Nottingham, 1–4 Settembre 2008
- **Bardella P.**, Rossetti M., Gioannini M., Montrosset I., “*Modeling of Broad Band Quantum Dot Superluminescent Diodes with Chirping*”, International Workshop on Semiconductor Quantum Dot Devices and Applications, Rennes, 7–8 Luglio 2008
- **Bardella P.**, Montrosset I., “*BPM Validation of the Modal Gain Measured with the Segmented Contact Method*”, European Conference on Integrated Optics (ECIO) 2008, Eindhoven, 11–13 Giugno 2008
- Rossetti M., **Bardella P.**, Gioannini M., Montrosset I., “*Carrier Transport Effects in Multi Layer Quantum Dot Lasers and SLDs*”, European Conference on Integrated Optics (ECIO) 2008, Eindhoven, 11–13 Giugno 2008
- Gioannini M., The G.A.P., **Bardella P.**, Montrosset I., “*Numerical Model For Design of Quantum Dot Superluminescent Diodes*”, Workshop on Long Wavelength Quantum Dots: Growth and Applications, Laser Workshop on Quantum Dots, Rennes, 5–6 Luglio 2007

- **Bardella P.**, Tromborg B., Montrosset I., “*Analysis of Self Pulsations in DBR Lasers: Two Alternative Approaches*”, WIAS Workshop On "Nonlinear Dynamics in Photonics", Berlino, 2–4 Maggio 2007
- **Bardella P.**, Montrosset I., Blanco Triana J. M., “*Beam Propagation Method For Simulation of Quantum Dot Flared Laser and SLD*”, XVI International Workshop on Optical Waveguide Theory and Numerical Modelling Copenhagen, 27–28 Aprile 2007
- Barletta A., **Bardella P.**, Montrosset I., “*Mode-Locked Multi-Quantum-Well Lasers: Comparison Between Different FD-TW Models*”, Proceedings of the 5th International Conference on Numerical Simulation of Optoelectronic Devices (NUSOD), Berlino, 19-22 Settembre 2005, p. 87–88
- **Bardella P.**, Montrosset I., Detoma E., Tromborg B., “*Analisis of Self-Pulsating DBR Lasing Dynamics with a Novel Formulation*”, Fifth Euromech Nonlinear Dynamics Conference (ENOC), Eindhoven, 7–12 Agosto 2005, p. 275
- Marulli M., **Bardella P.**, Montrosset I., “*Simulation of Optical Clock Recovery using DBR Lasers*”, 12th European Conference on Integrated Photonics (ECIO), Grenoble, 6–8 Aprile 2005

Conferenze nazionali

- Rossetti M., **Bardella P.**, Gioannini M., Montrosset I., “*Modeling and Design of Broad-Band Quantum Dot Super-Luminescent Diodes*”, Fotonica 2009, 11o Convegno Nazionale sulle Tecniche Fotoniche nelle Telecomunicazioni, Pisa, 27–29 Maggio 2009

Si autorizza il trattamento dei dati personali in base art. 13 del D. Lgs. 196/2003

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