

CURRICULUM VITAE

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On leave

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QUALIFICATIONS

- Experience in **modeling, simulating, analyzing, and developing** of:
 1. Devices for **THz** pulse Amplification and Generation.
 2. Light emitting diodes, short wavelength and long wavelength **semiconductor lasers (SLs)** used in **optical communication systems**.
 3. The behavior of solid explosive when heated by continuous and pulsed laser.
- Expert in using finite difference time domain (**FDTD**) simulator.
- Specialist in examining semiconductor lasers (**SLs**) dynamics under optical feedback (**OFB**) in the systems of **optical fiber amplifiers**.
- Experience in development of a **novel approach** of **SLs** operating under **strong OFB**.
- **Industrial experience** in reducing noise and also reducing production cost of **SLs amplifier** used in optical communication systems from collaboration with researcher at **Furikawa Company in Japan** and also expert in measuring the light-current characteristics, dynamics and **noise** of **SLs** in fiber amplifier systems.
- Broad theoretical background in general physics and mathematics.
- Nine years experience in teaching of general physics courses for undergrad students.
- experience in teaching of advanced physics courses for master course students.

EDUCATION

- **Ph. D. in Theoretical Physics (Semiconductor Lasers)**, Dept. of Physics, Assiut University, Assiut, Egypt, basing on studying at laboratory of Optical communication led by Prof. Minoru Yamada, Dept. of Electrical and Computer Engineering, **Graduat School of Natural Science and Technology, Kanazawa University in Japan**, May 2007.
Dissertation Title: "Modeling and Numerical Simulation of Dynamics and Noise in Semiconductor Lasers for Optical Communication Systems"
- **Master of Science in Theoretical Physics (condensed matter)**, Dept. of Physics, Assiut University, Egypt, Nov. 1998.
Dissertation Title: "Thermal and Laser initiation of solid explosive"
- **Bachelor of Science in General Physics (Very Good)**, Dept. of Physics, Assiut University, Egypt, June 1994.

EXPERIENCE

- Currently working as **Asistant professor** in the Department of Physics, Jazan University, Saudi Arabia, 2009- present. **Bulit and Taught** many courses (lecture) for Undergraduate students and supervising on the labs (Freshman labs, Electronics labs).
- **Asistant professor** in the Department of Physics, Assiut University, Egypt, 2007- present. **Bulit and Taught** many courses (lecture) for Undergraduate and graduate (MSc) students and supervising on the labs (Freshman labs, Electronics labs, Optics labs, and Computer labs).
- **A postdoctoral fellowship** in the Department of Electronic and Electrical Engineering, **Pohang University of Science and Technology (POSTECH)**, Republic of Korea. with **Modeling and Simulation of devices for THz pulse Amplificaction and Generation** using **FDTD** simulator to reduce the threshold current of amplification and improve the device performance. (Oct. 2008 – April 2009)
- **Developed numerical approaches** to analyze the nonlinear dynamics of SLs as essential radiation sources in the optical communications systems which are the backbones of the fiber to the home (**FTTH**) networks.
- Investigated the influence of the instantaneous mode-competition phenomena on dynamics and noise in SLs.
- **Modeled noise** and its influnce on the dynamics of SLs.
- Characterized the operation characteristics of **InGaAsP (1.55 μm)**, **AlGaAs (760 μm)** and **InGaAs (980nm)** lasers as common laser diodes applied in the communication systems.
- Analysed dynamics of SLs subjected to OFB, and analyzed OFB noise in lasers utilized as pumping sources in fiber communication systems.
- **Collaborated** with researchers at **Furikawa Company in Japan** to measure the light-current characteristics, dynamics and noise of SLs used in fiber amplifier systems.
- **Research Assistant** in laboratory of Optical communication, Dept. of Electrical and Computer Engineering, Graduat School of Natural Science and Technology, Kanazawa University, **Japan 2000- 2003**.
- **Research and lecturer Assistant** in the Department of Physics, Assiut University, Egypt, **1998 -2000 and 2003-2006**.
Designed, built and reported, many expermintns in electronics laboratory for undergrade student level three and four.
- **Instructor** at Department of Physics, Assiut University, Egypt, **(1994 - 1998)**.
Taught Undergraduate labs (Freshman labs, Properties of Matter labs, Electronics labs, Optics labs, and Nuclear labs) and conducted recitation sessions (Classical Mechanics, Electromagnetic, Electronic Circuit, Modern Physics, and Quantum Mechanics)

Teaching Experience

- Electrodynamics and electromagnetic principles
- Semiconductor and semiconductor lasers
- Laser physics and its applications
- Quantum mechanics level I and level II
- Electronics and circuits
- Mathematical physics and computational physics
- Classical and analytical mechanics
- Use of computers for physical measurements
- Thermodynamics

SKILLS

- Design and graphic Tools: Harvard Graphics, Delta Graph, Microsoft office and Origin.
- Programming environments: FDTD simulators, Basic, FORTRAN, MATLAB, MATHEMATICA and MATHCAD.
- Languages: Arabic (Native), English (very good), Japanese (Fair), Germany (Fair) and French (Fair).

HONORS

- Achieved **highest GPA** in the Physics Department, Faculty of Science, Assiut University, Egypt, 1994
- Achieved **highest GPA** among all MS students, in the Physics Department, Faculty of Science, Assiut University, Egypt, 1996
- Graduate Student Research Assistantship, in the Physics Department, Faculty of Science, Assiut University, Egypt, 1996-1998
- Graduate Student Research Assistantship, in the Physics Department, Faculty of Science, Assiut University, Egypt and Dept. of Electrical and Computer Engineering, Graduat School of Natural Science and Technology, Kanazawa University in **Japan**.

MEMBERSHIPS

- Institute of Electrical and Electronics Engineers IEEE, and the **IEEE Lasers & Electro-Optics Society LEOS**
- The Japan Society of Applied Physics
- The International Society for Optical Engineering **SPIE**

AWARDS

- **Postdoctoral fellowship (supported by KOSEF)** in the Department of Electronic and Electrical Engineering, Pohang University of Science and Technology (POSTECH), Republic of Korea, **Oct. 2008 - April 2009**.
- **Supporting from Foundation for C&C Promotion, Japan**, to present a part of my research work in the SPIE International Conference of Optoelectronics, San Jose, CA, USA, **2003**.
- **Private Japanese government scholarship** as a research assistant at laboratory of Optical communication, Dept. of Electrical and Computer Engineering, Graduat School of Natural Science and Technology, Kanazawa University in Japan, 2000-2003.

REFERENCES

I. Professor Mohamed S. Abdulazeem

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PUBLICATIONS

Publications in International Journals

1. **S. Abdulrhmanned** "Intensity and frequency Noise of Semiconductor Lasers Subject to Strong Optical and its Dependence on the Linewidth Enhancement Factor", under preparation and will be submitted soon to Optics and Laser Technology.
2. **S. Abdulrhmann** "Spontaneous Emission factor and its Influence on the Operation and Route to Chaos of Semiconductor Lasers Subject to Optical", under preparation will be submitted soon to SPIE Conference will be held in USA.
3. **S. Abdulrhmann** "Intensity and frequency Noise of Semiconductor Lasers Subject to Strong Optical and its Dependence on the Spontaneous emission Factor", under preparation.
4. **S. Abdulrhmann**, M. Yamada and M Ahmed "Numerical Modeling of the Output and Operations of Semiconductor Lasers Subject to Strong Optical Feedback and its Dependence on the Linewidth Enhancement Factor", *International Journal of Numerical Modelling: Electronic Networks, Devices and Fields*, **in press 2010**.
5. M. Ahmed, M. Yamada and **S. Abdulrhmann** "Numerical Modeling of the Route-to-chaos of Semiconductor Lasers under Optical Feedback and its Dependence on the External Cavity Length", *International Journal of Numerical Modelling: Electronic Networks, Devices and Fields*, **Vol. 22**, Issue 6, pp. 434-445, **2009**.
6. M. Ahmed, M. Yamada and **S. Abdulrhmann** "Semiconductor Laser Dynamics under Optical Feedback: I. Type of Transition to Chaos in FP Lasers", *AIUB Journal of Science and Engineering*, **Vol. 7, No. 1, 1-5, 2008**.
7. **S. Abdulrhmann**, M. Yamada and M Ahmed "Semiconductor Laser Dynamics under Optical Feedback: II. Influence of the Linewidth Enhancement Factor in Fiber-Grating Lasers", *AIUB Journal of Science and Engineering*, **Vol. 7, No. 1, 13-19, 2008**.
8. **S. Abdulrhmann**, M. Ahmed, T. Okamoto, W. Ishimori and M. Yamada "An improved analysis of semiconductor laser dynamics under strong feedback", *IEEE J. Select. Topics Quantum.*, **9(5)**, 1265-1278, **2003**.
9. **S. Abdulrhmann**, and M. Yamada, "Modeling and simulations of dynamics of semiconductor lasers with optical feedback", *AIUB Journal of Science and Engineering*, **1(2)**, 22-34, **2003**.
10. **S. Abdulrhmann**, and M. Yamada, "Effect of strong optical feedback on operation and noise characteristics of semiconductor lasers", *TECHNICAL REPORT OF IEICE. LQE-11*, 41-44, **2003**.
11. **S. Abdulrhmann**, M. Ahmed, T. Okamoto, W. Ishimori and M. Yamada, "Analysis of dynamics and intensity noise of semiconductor lasers under strong optical feedback", *Institute of Physics Conference Series*, **174**, pp. 409-413, **2003**.
12. **S. Abdulrhmann**, M. Ahmed and M. Yamada, "Influence of nonlinear gain and nonradiative recombination on the quantum noise in InGaAsP Semiconductor lasers ", *Optical Review* **9(6)**, 260-268, **2002**.
13. M. Ahmed, M. Yamada and **S. Abdulrhmann**, " A multimode model of mode competition low frequency noise in semiconductor lasers", *Fluctuation and Noise Letters*, **1(3)**, L163-L170, **2001**.

Publications in International Proceedings

1. **S. Abdulrhmann** "Optimum Conditions for Operating Pumping Laser Subject to Strong Optical Feedback", *proceedings of The Sixth International Conference on wireless and Optical communications Networks (WOCN2009)*, Cairo Egypt, April 28 - 30, **2009**.
2. **S. Abdulrhmann** and Minoru Yamada "Numerical Simulations of the Effect of the Linewidth Enhancement Factor on the Operation of Pumping Lasers under Optical Feedback", *proceedings of The Second Arab International Conference in Physics and Materials Science (CPMS)*, Alexandria, Egypt, October 27 - 29, **2007**.
3. Moustafa F. Ahmed, **S. Abdulrhmann**, and M. Yamada, "Optical feedback-induced noise in

- laser diodes in optical-disc systems”, The 46th IEEE International Midwest symposium on Circuits and systems, Cairo – Egypt, December 2003.
4. **S. Abdulrhmann**, and M. Yamada, “Theoretical Analysis of the Operating State of Semiconductor Lasers Subject to Strong Optical Feedback”, *proceedings of NUSOD '03*, Numerical Simulation of Semiconductor Optoelectronic Devices, ThB2, 2003,.
 5. **S. Abdulrhmann**, M. Ahmed, and M. Yamada, “New model of analysis of semiconductor laser dynamics under strong optical feedback in fiber communication system”, *proceedings of SPIE*, **4986**, 1-12, 2003.
 6. **S. Abdulrhmann**, M. Ahmed, T. Okamoto, W. Ishimori and M. Yamada, “Analysis of dynamics and intensity noise of semiconductor lasers under strong optical feedback”, *proceeding of the 29th international Symposium on Compound Semiconductors*, Tu-p-24, 2002.
 7. **S. Abdulrhmann**, M Ahmed ,T. Okamoto, W. Ishimori and M. Yamada, “A novel model of semiconductor lased operation under strong optical feedback ”, *18th IEEE International Semiconductor Laser Conference*, Garmish, **TuP 17**, Germany, 2002.
 8. **S. Abdulrhmann**, M. Ahmed, and M. Yamada, “Numerical simulation of intensity and phase fluctuations in long-wavelength lasers”, *Proceeding of the 16th International Conference on Noise in Physical Systems and 1/f Fluctuations*, pp. 307-310, Oct. 2001.

Presentations in Domestic and International conferences

1. **S. Abdulrhmann** “Optimum Conditions for Operating Pumping Laser Subject to Strong Optical Feedback”, *proceedings of The Sixth International Conference on wireless and Optical communications Networks (WOCN2009)*, Cairo Egypt, April 28 - 30, **2009**.
2. **S. Abdulrhmann** “Semiconductor Lasers Used in Optical Communication Systems”, **Invited talk** in The Third International Conference on Modern Trends In Physics Research *MTPR-08*, Physics Dept., Faculty of Science, Cairo University, Egypt, 6-10 April **2008**.
3. **S. Abdulrhmann** “Influence of the Linewidth Enhancement Factor on the Noise and Operation of Laser Diodes under Strong Optical Feedback”, The Third International Conference on Modern Trends In Physics Research *MTPR-08*, Physics Dept., Faculty of Science, Cairo University, Egypt, 6-10 April **2008**.
4. **S. Abdulrhmann** “Semiconductor Lasers Subject to Optical Feedback, Operations and Noise”, The 4th Humbold Kolleg on Advancement of Science and Technology In Africa, Assiut University, Egypt, 22-24 March, **2008**.
5. **S. Abdulrhmann** and Minoru Yamada “Numerical Simulations of the Effect of the Linewidth Enhancement Factor on the Operation of Pumping Lasers under Optical Feedback”, The Second Arab International Conference in Physics and Materials Science (CPMS), Alexandria, Egypt, October 27 - 29, **2007**.
6. **S. Abdulrhmann** “semiconductor lasers”, **Invited talk** in The first Annual Conference for Young Scientists, Basic Science & Technology, Faculty of science, Assiut University, Assiut, Egypt, May **2007**.
7. Moustafa F. Ahmed, **S. Abdulrhmann**, and M. Yamada, “Optical feedback-induced noise in laser diodes in optical-disc systems”, The 46th IEEE International Midwest symposium on Circuits and systems, Cairo – Egypt, December 2003.
8. **S. Abdulrhmann**, and M. Yamada, “Theoretical Analysis of the Operating State of Semiconductor Lasers Subject to Strong Optical Feedback”, *proceedings of NUSOD '03*, Numerical Simulation of Semiconductor Optoelectronic Devices, ThB2, October 13-16, University of Tokyo, Japan 2003.
9. **S. Abdulrhmann**, M. Ahmed, T. Okamoto, W. Ishimori and M. Yamada, “Influence of parameter on the operation of pumping lasers under optical feedback ”, *26th ISOC*, **D-33**, Japan, 2003.
10. **S. Abdulrhmann**, and M. Yamada, “Numerical simulation of operation state and noise properties of semiconductor laser subject to strong optical feedback”, the *64th Autumn Meeting, the JSAP*, Japan, 2003.
11. **S. Abdulrhmann**, M. Ahmed, and M. Yamada, “New model of analysis of semiconductor

- laser dynamics under strong optical feedback in fiber communication systems”, *photonics West, Optoelectronics 2003*, San Jose, **4986-61**, 2003.
12. **S. Abdulrhmann**, M. Ahmed and M. Yamada, “Numerical simulation of intensity of semiconductor laser operation under strong optical feedback”, the *50th Spring meeting*, the JSAP, Japan, 2003.
 13. **S. Abdulrhmann**, T. Okamoto, M. Ahmed and M. Yamada, “Optical feedback induced pulsation in semiconductor lasers”, the *49th Spring meeting, the JSAP*, Japan, 2002.
 14. **S. Abdulrhmann**, M. Ahmed ,T. Okamoto, W. Ishimori and M. Yamada, “Analysis of dynamics and intensity noise of semiconductor Lasers under strong optical feedback”, *29th International symposium on Compound Semiconductor Lausanne*, Tu-P-24, Switzerland, 2002.
 15. **S. Abdulrhmann**, M Ahmed ,T. Okamoto,W. Ishimori and M. Yamada, “A novel model of semiconductor lased operation under strong optical feedback ”, *18th IEEE International Semiconductor Laser Conference*, Garmish, **TuP 17**, Germany, 2002.
 16. **S. Abdulrhmann**, and M. Yamada, “Pulsation induced by strong optical feedback in CW operated semiconductor lasers”, *25th ISOS C-3*, Japan, 2002.
 17. **S. Abdulrhmann**, M. Ahmed and M. Yamada, “Numerical simulation of intensity and phase noise tacking into account gain nonlinearity”, the *48th Spring meeting, the JSAP*, Japan, 2001
 18. **S. Abdulrhmann**, and M. Yamada, “Numerical simulation of intensity and phase fluctuations in long- wavelength lasers”, *16th international conference on noise in physical Systems and 1/fFlucations*, Florida USA, 2001.
 19. **S. Abdulrhmann**, and M. Yamada, “Modeling and simulation of noise in 1.55 um InGaAsP lasers”, *24th ISOC*, **E-16**, Japan, 2001.