


Refereed Publications (grouped by field of research)


- A) Fundamental Physics Research
- B) Nanoscience
- C) Electromagnetic Theory
- D) Education
- E) Integrated Optics
- F) Atomic Physics
- G) Plasma Physics and Fusion Energy


A) Fundamental Physics Research


E. R. Hedin, “*Extra-dimensional confinement of quantum particles,*” Physics Essays, Vol. 25, No. 2, pp. 177-190, June, 2012.  [PDF \(540KB\)](#)


B) Nanoscience


Y. S. Joe, S. H. Lee, and E. R. Hedin, “*Temperature and Magnetic Field Effects on Electron Transport through DNA Molecules in a Two-Dimensional Four-Channel System,*” Jnl. of Nanoscience and Nanotechnology, **13**, 1 (2013).


S. Malakooti, E. R. Hedin, Y. D. Kim, and Y. S. Joe, *Enhancement of charge transport in DNA molecules induced by the next nearest-neighbor effects*, J. of Applied Physics, vol 112, 094703 (2012).  [PDF \(1,332KB\)](#)


J. Cutright, Y. S. Joe, and E. R. Hedin, *Transmission through multiple nanoscale AB-rings with Zeeman-split quantum dots*, Computational Electronics (IWCE), 2012 15th International Workshop on: IEEE Xplore, DOI: 10.1109/IWCE.2012.6242827, (2012).  [PDF \(887 KB\)](#)


S. Malakooti, E. R. Hedin, and Y. S. Joe, *Molecular electronics of DNA double helices using second-order tight-binding modeling*, Computational Electronics (IWCE), 2012 15th International workshop on: IEEE Xplore, DOI: 10.1109/IWCE.2012.6242858, (2012).  [PDF \(905 KB\)](#)


E. R. Hedin, A. C. Perkins, and Y. S. Joe, *Combined Aharonov-Bohm and Zeeman spin-polarization effects in a double quantum dot ring*, Physics Letters A 375, 651 (2011).  [PDF \(1,293 KB\)](#)


A. C. Perkins, E. R. Hedin, and Y. S. Joe, *Electron Spin-Polarization via nano-Electronics Circuits: Spintronics Applications of Zeeman and Aharonov-Bohm Effects on Electron Transport in a Double Quantum Dot Ring*, LAP LAMBERT Academic Publishing (January 13, 2011).  [PDF \(812 KB\)](#)


E. R. Hedin and Y. S. Joe, *Sensitive spin-polarization effects in an Aharonov-Bohm double quantum dot ring*, J. of Applied Physics, 110, 026107 (2011).  [PDF \(496 KB\)](#)


S. H. Lee, E. R. Hedin, and Y. S. Joe, “*Electron transport in DNA molecules*”, LAP LAMBERT Academic Publishing (November, 2011).  [PDF \(333 KB\)](#)


Y. S. Joe, S. H. Lee, and E. R. Hedin, *Electronic and transport properties of DNA-based nanowires*, AIP Conference Proceeding (ICPS-30), V1399, 845 (2011).  [PDF \(746 KB\)](#)


Y. S. Joe, S. H. Lee, and E. R. Hedin, *Electron transport through asymmetric DNA molecules*, Physics Letters A 374, 2367 (2010).  [PDF \(2,193 KB\)](#)


E. R. Hedin and Y. S. Joe, *Spin-polarized electron transport through nanoscale devices*, World Journal of Engineering, Vol. 7, Supplement 2, p. 317 (2010).  [PDF \(333 KB\)](#)

A. M. Satanin, E. R. Hedin, and Y. S. Joe, *Quantum dots: Fano resonances in an Aharonov-Bohm ring*, Encyclopedia of Complexity and Systems Science edited by R. Meyers in Springer, New York, Vol 8, pp 7289-7309 (2009).  [PDF \(724 KB\)](#)


E. R. Hedin, Y. S. Joe, and A. M. Satanin, *Resonance and phase properties of a three-terminal Aharonov-Bohm ring with an embedded quantum dot*, J. Phys.: Condens. Matter **21**, 015303 (2009).  [PDF \(544 KB\)](#)

Y. S. Joe, E. R. Hedin, and J. S. Kim, *Flux-dependent anti-crossing of resonances in parallel non-coupled double quantum dots*, Physics Letters A, **372**, 5488 (2008).  [PDF \(658 KB\)](#)


E. R. Hedin, Y. S. Joe, and A. M. Satanin, *Sharpened Aharonov-Bohm oscillations near resonance in a balanced ring with double quantum dots*, J. of Computational Electronics, Vol. **7**, 280 (2008).  [PDF \(684 KB\)](#)


Y.S. Joe, E. R. Hedin, and A. M. Satanin, *Manipulation of resonances in an open three-terminal interferometer with an embedded quantum dot*, Phys. Rev. B, **76**, 085419 (2007). Also selected for the September 3, 2007 issue of Virtual Journal of Nanoscale Science and Technology.  [PDF \(225 KB\)](#)


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E. R. Hedin, A. M. Satanin, and Y. S. Joe, *Control of Fano resonances and the transmission phase of a multi-terminal Aharonov-Bohm ring with three embedded quantum dots*, J. of Computational Electronics, **6**, 167 (2007).  [PDF \(365 KB\)](#)


Yong S. Joe, Eric R. Hedin, Arkady M. Satanin, *Fano resonance induced by a quantum dot in an open three-terminal interferometer*, Proc. of the XI Annual Symposium of "Nanophysics and Nanoelectronics", **2**, pp 307-308 (2007).


A. M. Satanin, E. R. Hedin, Y. S. Joe, *Collision of Fano resonances: an exact solvable model*, Physics Letters A **349**, 45 (2006).  [PDF \(168 KB\)](#)


E. R Hedin, R. M. Cosby, A. M. Satanin, Y. S. Joe, *Electron wave interferometry through an asymmetric Aharonov-Bohm ring*, J. of Applied Physics, **97**, 063712 (2005). Also selected for the March 28, 2005 issue of Virtual Journal of Nanoscale Science and Technology.  [PDF \(314 KB\)](#)


Y. S. Joe, J. S. Kim, E. R. Hedin, R. M. Cosby, and A. M. Satanin, *Fano resonances through quantum dots in tunable Aharonov-Bohm rings*, J. of Computational Electronics **4**, 129-133 (2005).  [PDF \(553 KB\)](#)

C) Electromagnetic Theory


Y. S. Joe, J-F. D. Essiben, J. Cho, and E. R. Hedin, *Design and modeling of electromagnetic impedance surfaces to reduce coupling between antennas*, J. of Wireless Engineering and Technology, vol 3, 152 (2012).  [PDF \(1,572 KB\)](#)

J-F. D. Essiben, E. R. Hedin, Y. D. Kim, and Y. S. Joe, *Electromagnetic Compatibility of Aperture Antennas Using Electromagnetic Band Gap Structure*, IET Microwaves, Antennas and Propagation, vol 6, 982 (2012).  [PDF \(765 KB\)](#)

Y. S. Joe, J. D. Essiben, E.R. Hedin, J. T. N. Bisse, J. Matanga, *Optimization of impedance plane reducing coupling between antennas*, J. of Wireless Engineering and Technology, Vol. 2, No. 1, pp. 1 – 8 (2011).  [PDF \(745 KB\)](#)

J. D. Essiben, E. R. Hedin, and Y. S. Joe, *Decoupling and radiation of antennas on the surface of a circular cylinder with impedance*, Journal of Electromagnetic Analysis and Applications, **2**, 195 (2010).  [PDF \(935 KB\)](#)

D) Education

E. R. Hedin, "Questions from the Edge: Using Informal Surveys to Build Rapport with Students," Jnl. of College Science Teaching, Jan./Feb. (2007) 60-62.  [PDF \(122 KB\)](#)

E) Integrated Optics

E. R. Hedin and F. J. Goetz, "Experimental Studies of Electro-optic Polymer Modulators and Waveguides", Applied Optics **34**, 1554 (1995).

F) Atomic Physics

L.-E. Berg, K. Ekvall, **E. Hedin**, A. Hishikawa, A. Karawajczyk, S. Kelly, and T. Olsson, "Lifetime Measurements of Excited Molecular States Using a Ti:Sapphire

Laser: Radiative Lifetimes of the $B^2\Sigma^+$ and $C^2\Pi$ states of BaBr", Chem. Phys. Lett. **209**, 47 (1993).

G) Plasma Physics and Fusion Energy

J. R. Drake, **E. R. Hedin**, P. Karlsson, Jin Li, and H.-E S  therblom, "*Experimental Studies of Equilibrium in the Toroidal Extrap T1 Experiment*", Physica Scripta **42**, 73 (1990).

E. R. Hedin, "*Three-Dimensional Probe Measurements of Extrap T1 Equilibria*", The Royal Institute of Technology, Stockholm, TRITA-PFU-88-12 (1988).

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E. R. Hedin, M. Koepke, and F. L. Ribe, "*Experimental Studies of the Equilibrium of a Linear High-Beta $l = 1$ Stellarator*", Physics of Fluids **30**, 2885 (1987).

E. R. Hedin, M. Koepke, and F. L. Ribe, "*Experimental Studies of the Dynamics of a Linear High-Beta $l = 1$ Stellarator*", Physics of Fluids **30**, 3821 (1987).

L. Ribe, M. E. Koepke, **E. R. Hedin**, C. M. Greenfield, "*Linear, High-Beta, $l=1$ and Heliac Stellarator Experiments*", in Plasma Physics and Controlled Nuclear Fusion Research 1986 (Proc. 11th Int. Conf., Kyoto) IAEA, Vienna, 1987, Vol. 2, p. 739.