

Assistant Professor
Full Time Faculty
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Interest Areas:

Medical Physics

Abbreviated Curriculum Vitae:

Education:

Ph.D.: Boğaziçi University, Department of Physics 2009

M.S.: Boğaziçi University, Department of Physics 2003

B.S.: Yıldız Teknik University, Department of Physics 2000

Ph.D. Thesis:

“Exactly Solvable Potentials with Dirac Delta Point Interactions”

Thesis Advisor: Prof. Dr. Ersan Demiralp

M.S. Thesis:

“Approximate Ground State Energies of One Dimensional
Potential Wells by the S-Matrix Formalism”

Thesis Advisor: Prof. Dr. Mehmet Haluk Beker

Professional Experience:

Assistant Professor, Boğaziçi University 2018-Present

Teaching Assistant, Boğaziçi University 2004-2009

Research Experience:

Postdoctoral Researcher, University of California, Irvine

Postdoctoral Researcher, Boğaziçi University

Courses:

Phys101: Physics I

Phys201: Physics III

PHYS337: Introduction to Physical Methods in Medical Diagnosis

PHYS491: Introduction to Research in Physics I

PHYS492: Introduction to Research in Physics II

PHYS690: M.S. Thesis

Projects:

BAP 15362: Acoustic Microscopy Guided Laser Therapy Applications (Completed, 2022)

Students Supervised:

Graduate Students:

Serife Zuleyha Yelken, M.Sc. (2020).

Thesis Title: The Ultrasonic Properties of Colon Cancer Tissue

Publications:

1. H. Uncu, **H. Erkol**, E. Demiralp, and H. Beker, "Solutions of the Schrodinger equation for Dirac delta decorated linear potential", Central European Journal of Physics, Volume 1, pages: 1-19, (2005).
2. **H. Erkol** and E. Demiralp, "The Woods-Saxon potential with point interactions", Physics Letters A, Volume 365, pages: 55-63, (2007).
3. **H. Erkol** and E. Demiralp, "Exact solutions for a Hamiltonian with the Morse potential and the Dirac delta shell interactions", Molecular Physics, Volume 107, pages: 2053-2062, (2009).
4. **H. Erkol** and M. B. Unlu, "Virtual source method for diffuse optical imaging", Applied Optics, Volume 52, No: 20, pages: 4933-4940, (2013).
5. **H. Erkol**, E. Aytac-Kipergil, and M. B. Unlu, "Photoacoustic radiation force on a microbubble", Physical Review E, Volume 290, 023001, pages: 1-11, (2014).
6. **H. Erkol**, A. Demirkiran, N.Uluc, and M. B. Unlu, "Analytical reconstruction of the bioluminescent source with priors", Optics Express, Volume 22, No: 16, pages: 19758-19773, (2014).

7. **H. Erkol** and M. B. Unlu, "Spectral power density of the random excitation for the photoacoustic wave equation", *American Institute of Physics Advances*, Volume 4, 097103, pages: 1-11, (2014).
8. **H. Erkol**, F. Nouizi, M. B. Unlu, and G. Gulsen, "An extended analytical approach for diffuse optical imaging", *Physics in Medicine and Biology*, Volume 60, pages: 5103-5121, (2015).
9. **H. Erkol**, F. Nouizi, A. Luk, M. B. Unlu, and G. Gulsen, "Comprehensive analytical model for CW laser induced heat in turbid media", *Optics Express*, Volume 23, No: 24, pages: 31069-31084, (2015).
10. F. Nouizi, **H. Erkol**, A. Luk, M. B. Unlu, and G. Gulsen, "Real-time photomagnetic imaging", *Biomedical Optics Express*, Volume 7, No: 10, pages: 3899-3904, (2016).
11. F. Nouizi, **H. Erkol**, A. Luk, M. Marks, M. B. Unlu, and G. Gulsen, "An accelerated photo-magnetic imaging reconstruction algorithm based on an analytical forward solution and a fast Jacobian assembly method", *Physics in Medicine and Biology*, Volume 61, pages: 7448-7465, (2016).
12. E. Aytaç-Kiperçil, **H. Erkol**, S. Kaya, G. Gulsen, and M. B. Unlu, "An analysis of beam parameters on proton-acoustic waves through an analytic approach", *Physics in Medicine and Biology*, *Physics in Medicine and Biology*, Volume 62, pages: 4694-4710, (2017).
13. A. Luk, F. Nouizi, **H. Erkol**, M. B. Unlu, and G. Gulsen, "Ex vivo validation of photo-magnetic imaging", *Optics Letters*, Volume 42 (20), pages: 4171- 4174, (2017).
14. A. Demirkiran, A. Karakuzu, **H. Erkol**, H. Torun, and M. B. Unlu, "Analysis of microcantilevers excited by pulsed-laser-induced photoacoustic waves", *Optics Express* Volume 26 (4), pages: 4906-4919, (2018).
15. N. Uluc, M. B. Unlu, G. Gulsen, and **H. Erkol**, "Extended photoacoustic transport model for characterization of red blood cell morphology in microchannel flow", *Biomedical Optics Express*, Volume 9 (6), pages: 2785-2809, (2018).
16. F. Nouizi, T. C. Kwong, J. Ruiz, J. Cho, Y. W. Chan, K. Ikemura, **H. Erkol**, U. Sampathkumaran, and G. Gulsen, "A thermo-sensitive fluorescent agent based method for excitation light leakage rejection for fluorescence molecular tomography", *Physics in Medicine and Biology*, Volume: 64 (3), pages: 035007, (2019).
17. M. Algarawi, **H. Erkol**, A. Luk, S. Ha, M. B. Unlu, G. Gulsen, and Farouk Nouizi, "Resolving tissue chromophore concentration at MRI resolution using multi-wavelength photo-magnetic imaging", *Biomedical Optics Express*, Volume: 11 (8), pages: 4244-4254, (2020).
18. M. Algarawi, **H. Erkol**, A. Luk, S. Ha, M. B. Unlu, G. Gulsen, and F. Nouizi, "Multi-Wavelength Photo-Magnetic Imaging System for Photothermal Therapy Guidance", *Lasers in Surgery and Medicine*, pages: 1-9, (2020).

19. **H. Erkol**, S. Z. Yelken, M. Algarawi, G. Gulsen, and F. Nouizi, "Validation of a comprehensive analytical model for photothermal therapy planning in a layered medium with gold nanoparticles", *International Journal of Heat and Mass Transfer*, Volume 163, pages: 120438, (2020).
20. F. Nouizi, M. Algarawi, **H. Erkol**, A. Luk, and G. Gulsen, "Multiwavelength photo-magnetic imaging algorithm improved for direct chromophore concentration recovery using spectral constraints", *Applied Optics*, Volume 60(35), pages: 10855-10861, (2021).
21. **Hakan Erkol**, "An analytical model to calculate the primary and secondary acoustic forces acting on microbubbles due to a short pulsed laser excitation", *European Journal of Science and Technology*, Volume 25, pages: 727-735, (2021).
22. **Hakan Erkol**, "An analytical model to calculate the primary and secondary acoustic forces acting on microbubbles due to a short pulsed laser excitation", *Physica Scripta*, Volume 97(8), pages: 085003, (2022).
23. F. Nouizi, **H. Erkol**, D. Nikkhah, T. C. Kwong, and G. Gulsen, "Development of a preclinical CCD-based temperature modulated fluorescence tomography platform", *Biomedical Optics Express*, Volume: 13 (11), pages: 5740-5752, (2022).