

Figen S. Oktem

Dept. of Electrical & Electronics Eng.
Middle East Technical University
06800 Ankara, Turkey

Phone: +90-312-210-2342
Email: figeno@metu.edu.tr
Website: <https://blog.metu.edu.tr/figeno/>

EDUCATION

- University of Illinois at Urbana-Champaign (UIUC)** Illinois, USA
Ph.D. in Electrical and Computer Engineering (GPA 4/4) 2009 - 2014
- *Thesis:* Computational imaging and inverse techniques for high-resolution and instantaneous spectral imaging
 - *Advisors:* Farzad Kamalabadi and Richard E. Blahut
- Bilkent University** Ankara, Turkey
M.S. in Electrical and Electronics Engineering (GPA 3.96/4) 2007 - 2009
- *Thesis:* Signal Representation and Recovery under Partial Information, Redundancy, and Generalized Finite Extent Constraints
 - *Advisor:* Haldun M. Ozaktas
- B.S.** in Electrical and Electronics Engineering (GPA 3.95/4) 2003 - 2007

PROFESSIONAL EXPERIENCE

- Assistant Professor**, *Department of Electrical and Electronics Engineering*, Middle East Technical University, Ankara, Turkey Jan. 2015 - Present
- Research focus on the development of novel sensing and imaging techniques for emerging applications, the characterization of the capabilities brought by these cyber-physical systems, inverse problems for signal and image reconstruction
- Postdoctoral Research Associate**, *Heliophysics Science Division* Sept. - Dec. 2014
NASA Goddard Space Flight Center, Greenbelt, MD, USA
- Research on novel computational spectral imaging techniques for high-resolution and instantaneous observations of the solar corona
- Doctoral Research Fellow**, *Coordinated Science Laboratory*, 2012 - 2014
University of Illinois at Urbana-Champaign, Urbana, IL, USA
- Research on the development of novel computational imaging techniques including high-resolution spectral imaging with photon sieves and instantaneous imaging spectroscopy, image reconstruction algorithms for multiframe deblurring, performance bounds and optimal designs for imaging
- Research Assistant**, *Heliophysics Science Division* June - Aug. 2012
NASA Goddard Space Flight Center, Greenbelt, MD, USA
- Research on image formation models for photon sieves, statistical modeling of solar spectral line parameters
- Teaching Assistant**, *Department of Electrical and Computer Engineering*, 2011 - 2012
University of Illinois at Urbana-Champaign, Urbana, IL, USA
- Course: Random Processes

Research Assistant, Coordinated Science Laboratory, 2009 - 2011
University of Illinois at Urbana-Champaign, Urbana, IL, USA

- Research on information-theoretic imaging with a focus on reconstruction algorithms for phase retrieval and deconvolution, information-theoretic study of the central limit theorem

Research Fellow and Teaching Assistant, Dept. of Electrical and Electronics Eng., 2007 - 2009
Bilkent University, Ankara, Turkey

- Research on mathematical principles governing the fundamental nature and limits of optical information processing (including information-carrying capacity of optical systems, fast and accurate discrete computation for wave propagation, sub-Nyquist sampling)

RESEARCH INTERESTS

- **Computational Imaging:** Techniques for non-traditional sensing of image data, multi-spectral imaging, spectroscopy, radar imaging, microwave imaging, terahertz imaging, compressed sensing, computational microscopy, lensless imaging; advanced algorithms and techniques for image and signal recovery, multi-image and sensor fusion; innovative imaging system designs
- **Inverse problems:** Model-based data inversion, sparsity-based inversion, statistically-based inversion methods, optimization-based inversion methods; advanced algorithms for inverse problems in imaging (such as for deblurring, phase retrieval, multi-sensor fusion)
- **Statistical Signal and Image Processing:** Bayesian methods, detection and estimation theory, radar signal processing
- **Optical Information Processing:** Digital computation of wave propagation, optimal sampling, phase-space optics, time-frequency analysis, non-stationary signal processing, linear canonical transforms, fractional Fourier transforms, information-carrying capacity of optical systems

HONORS, RECOGNITION & OUTSTANDING ACHIEVEMENTS

NASA Earth and Space Science Fellowship, NASA Headquarters	2012-2014
"Top 10%" Paper Award, IEEE Int. Conf. on Image Processing	Oct. 2014
Selected to Heliophysics Summer School, NASA Living with a Star	Jul. 2013
Professor Kung Chie Yeh Endowed Fellowship, UIUC ECE Department	2012-2013
Selected to Scientific and Engineering Student Internship Program, NASA GSFC	Jun.-Aug. 2012
List of Teachers Ranked as Excellent by Their Students, UIUC	Spring 2012
Student Travel Award, SIAM Imaging Science Conference	Jan. 2012
Departmental Research Fellowship, Bilkent University EEE Department	2007-2009
National Graduate Scholarship, Turkish Scientific & Technological Research Council	2007-2009
Ranked in top 5 among 150 at graduation, Bilkent University EEE Department	May 2007
Dean's High Honor List, Bilkent University	2003-2007
High Technology and International Experience Scholarship, Bilkent Cyberpark	2003-2007
Full Undergraduate Scholarship, Bilkent University	2003-2007
Turkish Government International Education Scholarship, Ministry of Education	(declined)
"Golden Youths" Achievement Award, Isbank	Jul. 2003
Achievement Award, Final Dersaneleri	Jun. 2003
Ranked 29th among 1.5 million in the nationwide university entrance exam	Jun. 2003

GRANTS & PROJECTS

<i>PI</i> , Compressive Spectral Imaging with Photon-Sieves: Models, Algorithms, and Experimental Implementation, TUBITAK (3501)	2017-2020
<i>Consultant</i> , IMECE Satellite Infrastructure Development Project, TUBITAK UZAY	2018
<i>Consultant</i> , IMECE Satellite Infrastructure Development Project, TUBITAK UZAY	2017
<i>Consultant</i> , IMECE Satellite Infrastructure Development Project, TUBITAK UZAY	2016
<i>Consultant</i> , Ultra-Wideband 3-Dimensional Imaging Radar for Security, ASELSAN	2015-2017
<i>PI</i> , Phase-space based techniques for optimal optics design and sampling, METU	2015-2017
<i>Consultant</i> , CAFRAD-Multifunction Phased Array Radar System- Phase 1, ASELSAN	2015-2018
<i>Visiting Research Associate</i> , Milli-Arcsecond Diffractive Imaging of the Solar Corona, NASA GSFC	2014
<i>Research Fellow</i> , Slitless Solar Spectroscopy: Parametric Inversion Approach, NASA Headquarters	2012-2014

TEACHING ACTIVITIES

Instructor , Middle East Technical University	
• Theory of Image Formation (EEE 798)	
• Statistical Signal Processing and Modelling (EEE 503)	
• Signals and Systems (EEE 301)	
• Probability and Random Variables (EEE 230)	
Course Development , Middle East Technical University	
• Theory of Image Formation (EEE 798)	Summer 2015
Substitute Lecturer , University of Illinois at Urbana-Champaign	
• Digital Signal Processing (ECE 310)	Spring 2014
• Intro. to Image & Video Processing (ECE 418)	Spring 2013
• Digital Imaging (ECE 558)	Spring 2012 & Spring 2013
Graduate Teaching Assistant , University of Illinois at Urbana-Champaign	
• Random Processes (ECE 534)	Fall 2011 & Spring 2012
Graduate Teaching Assistant , Bilkent University	
• Digital Image Processing (EEE 526)	Spring 2009
• Optics (EEE 428)	Fall 2008
• Microprocessors (EEE 212)	Spring 2008
• Biomedical Signals & Instrumentation (EEE 481)	Fall 2007
Undergraduate Teaching Assistant , Bilkent University	
• Microprocessors (EEE 212)	Spring 2006
Voluntary Science Tutor , Community Volunteers Group, Bilkent University	Spring 2004

INDUSTRIAL EXPERIENCE

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| Research Intern , <i>Advanced Microelectronic Center (AMICA)</i> ,
AMO GmbH, Aachen, Germany | July - Sept. 2006 |
| Intern , Aselsan Electronic Industries Inc., Turkey | July - Aug. 2005 |

PROFESSIONAL MEMBERSHIPS, ACTIVITIES, AND SERVICE

Organizer

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| <ul style="list-style-type: none"> • Main Scientific Organizer,
Novel Techniques for Measurement and Processing of Solar and Space Data
41st COSPAR Scientific Assembly, Istanbul, Turkey | 2016 |
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Conference Committee

- Committee member for 2019 Computational Optical Imaging and Sensing (COSI) meeting
- Reviewer Committee member for SIU 2017

Journal Reviewer

- IEEE Transactions on Image Processing
- IEEE Transactions on Signal Processing
- IEEE Signal Processing Letters
- IEEE Transactions on Circuits and Systems II
- IEEE Photonics Technology Letters
- Journal of the Optical Society of America A (JOSA A)
- Optics Letters
- Optics Express
- Applied Optics
- EURASIP Journal on Advances in Signal Processing
- Circuits, Systems, and Signal Processing
- Springer Signal, Image, and Video Processing (SIVP)

Member

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| • Institute of Electrical and Electronics Engineers (IEEE) | 2008-present |
| • Optical Society of America (OSA) | 2010-present |
| • IEEE Signal Processing Society (SPS) | 2011-present |
| • Society for Industrial and Applied Mathematics (SIAM) | 2011-2013 |
| • American Geophysical Union (AGU) | 2014-present |
| • Turkish American Scientists and Scholars Association (TASSA) | 2014-present |

Administrative Duties

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| • Departmental STAR Research Program Committee, METU EEE | 2016-present |
| • Communication and Publicity Committee, Dean's Office | 2015-present |
| • Departmental ABET Committee, METU EEE | 2015-present |
| • PHD Qualifying Exam Committee, METU EEE Signal Processing Group | 2015-present |

Other

- Co-president of the Turkish Student Association at UIUC 2011-2012

PUBLICATIONS

JOURNAL PAPERS & BOOK CHAPTERS

1. **F. S. Oktem**, L. Gao, and F. Kamalabadi, "Chapter 5: Computational Spectral and Ultrafast Imaging via Convex Optimization." V. Monga (ed.), *Handbook of Convex Optimization Methods in Imaging Science*, Springer New York, 2017.
2. K.B. Alici, H. Buyuk, A.S. Yilmaz, C. Ozdemir, O. Karci, **F. S. Oktem**, and O. Selimoglu, "Periodic aperture imaging." *Optical Engineering*, vol. 56, pp. 050502, 2017.
3. **F. S. Oktem** and H. M. Ozaktas, "Effect of spatial distribution of partial information on the accurate recovery of optical wave fields." *Applied Optics*, vol. 56, pp. A133-A144, 2017.
4. **F. S. Oktem**, and H. M. Ozaktas, "Chapter 7: Linear canonical domains and degrees of freedom of signals and systems." J.J. Healy et al. (eds.), *Linear canonical transforms*, Springer New York, pp. 293-327, 2016.
5. A. Koc, **F. S. Oktem**, H. M. Ozaktas, and M. A. Kutay, "Chapter 9: Fast Algorithms for Digital Computation of Linear Canonical Transforms." J.J. Healy et al. (eds.), *Linear canonical transforms*, Springer New York, pp. 197-239, 2016.
6. **F. S. Oktem**, F. Kamalabadi, and J. M. Davila, "A parametric estimation approach to instantaneous spectral imaging," *IEEE Trans. Image Process.*, vol. 23, pp. 5707-5721, 2014.
7. H. M. Ozaktas and **F. S. Oktem**, "Phase-space window and degrees of freedom of optical systems with multiple apertures." *J. Opt. Soc. Am. A.*, vol. 30, pp. 682-690, 2013.
8. **F. S. Oktem** and H. M. Ozaktas, "Equivalence of linear canonical transform domains to fractional Fourier domains and the bicanonical width product: a generalization of the space-bandwidth product," *J. Opt. Soc. Am. A*, vol. 27, pp. 1885-1895, 2010.
9. **F. S. Oktem** and H. M. Ozaktas, "Exact relation between continuous and discrete linear canonical transforms," *IEEE Signal Process. Lett.*, vol. 16, pp. 727-730, 2009.

CONFERENCE PAPERS

1. O.F. Kar, U. Kamaci, F.C. Akyon, and **F. S. Oktem**, "Compressive Photon-Sieve Spectral Imaging." In *2018 OSA Imaging and Applied Optics Congress*, Orlando, Florida, 25-28 June 2018.
2. C. Isil and **F. S. Oktem**, "A Phase-Space Approach to Diffraction-Limited Resolution." In *2018 OSA Imaging and Applied Optics Congress*, Orlando, Florida, 25-28 June 2018.
3. O.F. Kar, U. Kamaci, F.C. Akyon, and **F. S. Oktem**, "Effect of Different Priors on Compressive Photon-Sieve Spectral Imaging." In *26th Signal Processing and Communications Applications Conference*, 2018 (national conference).
4. F.C. Akyon, U. Kamaci, and **F. S. Oktem**, "Image Deconvolution via Efficient Sparsifying Transform Learning." In *26th Signal Processing and Communications Applications Conference*, 2018 (national conference).
5. B. Iskender and **F. S. Oktem**, "Image Restoration for Sparse Aperture Optical Systems." In *26th Signal Processing and Communications Applications Conference*, 2018 (national conference).
6. M. Sadighi, **F. S. Oktem**, and B. M. Eyuboglu, "Diffusion Tensor Magnetic Resonance Electrical Impedance Tomography versus Magnetic Resonance Conductivity Tensor Imaging." In *2018 ISMRM Meeting*, Paris, France, 16-21 June 2018.

7. E. Anadol, I. Seker, S. Camlica, T. O. Topbas, S. Koc, L. Alatan, **F. S. Oktem**, and O. A. Civi, "UWB 3D near-field imaging with a sparse MIMO antenna array for concealed weapon detection" *Proc. SPIE* 10633, Radar Sensor Technology XXII, 106331D, 15-19 April 2018.
8. U. Kamaci, F.C. Akyon, T. Alkanat, and **F. S. Oktem**, "Efficient sparsity-based inversion for photon-sieve spectral imagers with transform learning." In *2017 IEEE GlobalSIP Symposium on Sparse Signal Processing and Deep Learning*, 2017.
9. B. Kocamis and **F. S. Oktem**, "Optimal Design of Sparse MIMO Arrays for Near-Field Ultrawideband Imaging." In *2017 25th European Signal Processing Conference (EUSIPCO)*, 2017.
10. K.B. Alici, O. Karci, A.S. Yilmaz, C. Ozdemir, **F. S. Oktem**, and O. Selimoglu, "OTF Analysis of a Spaceborne CMOS Imaging Sensor." In *8th International Conference on Recent Advances in Space Technologies (RAST)*, 2017.
11. B. Kocamis and **F. S. Oktem**, "Optimal MIMO Array Configuration for Ultrawideband Microwave Imaging." In *25th Signal Processing and Communications Applications Conference*, 1-4, 2017 (*national conference*).
12. **F. S. Oktem**, and T. Alkanat, "Fast Computation of Two-Dimensional Point-Spread Functions for Photon Sieves." In *OSA Digital Holography and Three-Dimensional Imaging*, JT3A. 34, 2016.
13. **F. S. Oktem**, F. Kamalabadi, and J. M. Davila, "Computational spectral imaging with photon sieves." In *24th Signal Processing and Communications Applications Conference*, 425-428, 2016 (*national conference*).
14. **F. S. Oktem**, F. Kamalabadi, and J. M. Davila, "High-resolution computational spectral imaging with photon sieves." In *IEEE Int. Conf. on Image Processing (ICIP)*, 5122–5126, 2014 ("Top 10%" Paper Award).
15. **F. S. Oktem**, F. Kamalabadi, and J. M. Davila, "Parameter estimation for instantaneous spectral imaging." In *IEEE Int. Conf. on Acoustic Speech and Signal Processing (ICASSP)*, 8148–8152, 2014.
16. H. M. Ozaktas, and **F. S. Oktem**, "Linear Canonical Transforms, Degrees of Freedom, and Sampling in Optical Signals and Systems." In *22nd Signal Processing and Communications Applications Conference*, 429–432, 2014 (*national conference*).
17. **F. S. Oktem**, J. M. Davila, and F. Kamalabadi, "Image formation model for photon sieves." In *IEEE Int. Conf. on Image Processing (ICIP)*, 2373–2377, 2013.
18. (**Invited**) **F. S. Oktem**, and H. M. Ozaktas, "Degrees of freedom of optical systems and signals with applications to sampling and system simulation." In the Proceedings of *OSA Imaging Systems and Applications (IS)*, ITu1E–1, 2013.
19. **F. S. Oktem**, and H. M. Ozaktas, "Condition number in recovery of signals from partial fractional Fourier domain information." In the Proceedings of *OSA Computational Optical Sensing and Imaging (COSI)*, JT4A–18, 2013.
20. **F. S. Oktem**, F. Kamalabadi, and J. M. Davila, "Cramer-Rao bounds and instrument optimization for slitless spectroscopy." In *IEEE Int. Conf. on Acoustic Speech and Signal Processing (ICASSP)*, 2169–2173, 2013.
21. **F. S. Oktem** and F. Kamalabadi, "Analytical Precision Limits in Slitless Spectroscopy." In *IEEE Statistical Signal Processing Workshop (SSP)*, 468–471, 2012.
22. **F. S. Oktem** and R. E. Blahut, "Schulz-Snyder Phase Retrieval Algorithm as an Alternating Minimization Algorithm," In the Proceedings of *OSA Computational Optical Sensing and Imaging (COSI)*, CMC3, 2011.

23. **F. S. Oktem** and R. E. Blahut, “Augmenting the Schulz-Snyder Algorithm for Phase Retrieval.” In *International Conference on Control and Optimization with Industrial Applications (COIA)*, Ankara, Turkey, 2011.
24. **F. S. Oktem** and H. M. Ozaktas, “Linear Algebraic Analysis of Fractional Fourier Domain Interpolation Problem.” In *17th Signal Processing and Communications Applications Conference*, 873–875, 2009 (*national conference*).

CONFERENCE ABSTRACTS

1. **F. S. Oktem**, F. Kamalabadi, and J.M. Davila, “Computational image formation with photon sieves for milli-arcsecond solar imaging.” *Novel Techniques for Measurement and Processing of Solar and Space Data, COSPAR*, Istanbul, Turkey, 2016.
2. J.M. Davila, **F. S. Oktem**, and F. Kamalabadi, “Milli-Arcsecond Imaging of the solar corona.” *Novel Techniques for Measurement and Processing of Solar and Space Data, COSPAR*, Istanbul, Turkey, 2016.
3. J.M. Davila, **F. S. Oktem**, F. Kamalabadi, J. O’Neill, A. Novo-Gradac, A. Daw, and D.M. Rabin, “Milli-Arcsecond (MAS) Imaging of the Solar Corona.” *AAS/Solar Physics Division Meeting*, Boulder, Colorado, 2016.
4. J.M. Davila, A. Daw, **F. S. Oktem**, K. Denis, J. O’Neill, and N. Shaw, “Milli-Arcsecond Diffractive Imaging of the Sun in the Extreme Ultraviolet.” *Conference on Measurement Techniques in Solar and Space Physics*, Boulder, Colorado, 2015.
5. **F. S. Oktem**, F. Kamalabadi, and J.M. Davila, “High-Resolution Solar Imaging With Photon Sieves.” *Next Generation Instrumentation in Solar and Space Physics: Critical Measurements From Low Cost Missions/Platforms, AGU Fall Meeting*, San Francisco, California, 2014.
6. F. Kamalabadi, **F. S. Oktem**, and J.M. Davila, “Slitless Solar Spectroscopy.” *Next Generation Instrumentation in Solar and Space Physics: Critical Measurements From Low Cost Missions/Platforms, AGU Fall Meeting*, San Francisco, California, 2014.
7. J. F. O’Neill, J.M. Davila, **F. S. Oktem**, and A. N. Daw, “Exploring the Photon Sieve: Mathematical Framework and Experimental Categorization”. *Next Generation Instrumentation in Solar and Space Physics: Critical Measurements From Low Cost Missions/Platforms, AGU Fall Meeting*, San Francisco, California, 2014.
8. (**Invited**) **F. S. Oktem**, F. Kamalabadi, and J.M. Davila, “Imaging Techniques for High-Resolution and Instantaneous Observations of the Solar Corona.” *Seventh Solar Image Processing Workshop*, La Roche-en-Ardenne, Belgium, 2014.
9. J. F. O’Neill, J.M. Davila, and **F. S. Oktem**, “Slitless solar spectroscopy”. *2014 Solar Physics Division Meeting*, Boston, MA, 2014.
10. **F. S. Oktem**, F. Kamalabadi, and J. M. Davila, “Multi-order slitless solar spectroscopy: a Parametric Inversion Approach.” *Sixth Solar Image Processing Workshop*, Bozeman, MT, 2012.
11. **F. S. Oktem**, F. Kamalabadi, and J. M. Davila, “Precision Limits for Source Parameter Estimation in Slitless Spectrometry.” *SIAM Conference on Imaging Science*, Philadelphia, PA, 2012.
12. **F. S. Oktem** and R. E. Blahut, “Analysis and Comparative Evaluation of Methods for Phase Retrieval.” *SIAM Conference on Imaging Science*, Philadelphia, PA, 2012.

SEMINARS AND INVITED TALKS

1. **F. S. Oktem**, “Computational Imaging and Inverse Problems: Making the Invisible Visible.” Talk given at Bilkent University, EEE 591/592 Seminar Series, Ankara, Turkey, Apr. 4, 2018.
2. **F. S. Oktem**, “Computational Spectral Imaging Techniques for High-Resolution and Instantaneous Observations of the Solar Corona.” Talk given at the NASA Goddard Space Flight Center, Special Heliophysics Science Seminar, Greenbelt, USA, Dec. 9, 2014.
3. **F. S. Oktem**, “Inverse Problems in Computational Imaging with Applications to Spectral Imaging.” Talk given at Koc University, Engineering Seminar Series, Istanbul, Turkey, Jun. 10, 2014.
4. **F. S. Oktem**, “Inverse Problems in Computational Imaging with Applications to Spectral Imaging.” Talk given at the Middle East Technical University, Ankara, Turkey, Jun. 2, 2014.
5. **F. S. Oktem**, “Multi-order slitless solar spectroscopy.” Talk given at the University of Illinois at Urbana-Champaign, Remote Sensing & Space Science Seminars, Urbana, IL, USA, Oct. 29, 2012.
6. **F. S. Oktem**, “Schulz-Snyder Phase Retrieval Algorithm as an Alternating Minimization Algorithm and an Approach towards Global Solutions.” Talk given at the University of Illinois at Urbana-Champaign, DSP Seminars, Urbana, IL, USA, Apr. 13, 2011.
7. **F. S. Oktem**, “A Unified View of Schulz-Snyder Phase Retrieval Algorithm.” Talk given at the University of Wisconsin at Madison, DSP Seminars, Madison, WI, USA, Dec. 15, 2010.
8. **F. S. Oktem**, “The Fractional Fourier Transform and its Applications in Signal Processing and Optics.” Talk given at the Univ. of Illinois at Urbana-Champaign, DSP Seminars, Urbana, IL, USA, Feb. 17, 2010.

RESEARCH VISITS

1. *Invited visit to National Science Foundation, Arlington, VA, USA*, hosted by Joseph M. Davila and Farzad Kamalabadi, Jun. 20-21, 2011.
2. *Invited visit to Washington University in St. Louis, MO, USA*, hosted by Joseph O’Sullivan, with Richard E. Blahut and Donald Snyder, Dec. 8-9, 2010.

POSTERS

1. **F. S. Oktem** and R. E. Blahut, “An information-theoretic study of the central limit theorem based on convex optimization.” Presented at *2011 School of Information Theory*, May 27-30, 2011, University of Texas at Austin, Austin.
2. **F. S. Oktem**, H. M. Ozaktas, and R. E. Blahut, “Time-frequency support approach to sub-Nyquist sampling.” Presented at *2010 School of Information Theory*, Aug. 5-8, 2010, University of Southern California, Los Angeles.

THESIS

1. **F. S. Oktem**, “Computational imaging and inverse techniques for high-resolution and instantaneous spectral imaging,” Ph.D. dissertation, Department of Electrical and Computer Engineering, *University of Illinois at Urbana-Champaign*, 2014.
2. **F. S. Oktem**, “Signal Representation and Recovery under Partial Information, Redundancy, and Generalized Finite Extent Constraints,” M.S. Thesis, Department of Electrical and Electronics Engineering, *Bilkent University*, Ankara, Turkey, 2009.