

## CURRICULUM VITAE

### M. IRSADI AKSUN

#### PERSONAL

**Date and Place of Birth:** April 5, 1957; TURKEY

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**Address:** Electrical and Electronics Engineering  
Koc University  
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#### EDUCATION

Ph.D. in Electrical and Computer Engineering Oct. 1990  
UNIVERSITY OF ILLINOIS at URBANA-CHAMPAIGN (UofI), Urbana, IL  
Thesis: Novel feeds for microstrip and slot antennas: Theory  
and experiment  
Advisors: Prof. S. L. Chuang, and Prof. Y. T. Lo

M.Sc. in Electrical and Electronics Engineering Dec. 1983  
MIDDLE EAST TECHNICAL UNIVERSITY (METU), Ankara, Turkey  
Thesis: Theory and design of exact-microwave filters  
Advisor: Prof. Canan Toker

B.Sc. in Electrical and Electronics Engineering June 1981  
MIDDLE EAST TECHNICAL UNIVERSITY, Ankara, Turkey

#### AWARDS and ACHIEVEMENTS

ASELSAN Scholarship for Undergraduate Studies in METU 1979-1981

Research Assistantship, METU 1982-1984 and 1985-1986

Research and Teaching Assistantship, UofI 1986-1990

Electromagnetic Communication Fellowship, UofI 1989-1990

Best Paper Award in ION GPS-92,  
ION Satellite Division's 5th International Meeting Sept. 1992

TUBITAK (Turkish NSF) Scientific Encouragement Award July 1994

Bilkent Distinguished Teaching Award-2001 Recipient  
(<http://www.bilkent.edu.tr/~Bilnews/current/honor.html>) May 2001

## **EXPERIENCE**

Dean of Engineering KOC UNIVERSITY Sariyer, Istanbul 34450, Turkey	5/04 - Present
Professor KOC UNIVERSITY, Electrical and Electronics Engineering, Sariyer, Istanbul 34450, Turkey	9/01-Present
Professor BILKENT UNIVERSITY, Electrical and Electronics Engineering, Bilkent, Ankara 06533, Turkey	1/99-9/01
Associate Professor BILKENT UNIVERSITY, Electrical and Electronics Engineering, Bilkent, Ankara 06533, Turkey	7/94-1/99
Assistant Professor BILKENT UNIVERSITY, Electrical and Electronics Engineering, Bilkent, Ankara 06533, Turkey	9/92-7/94
Post-doctoral Research Fellow UNIVERSITY OF ILLINOIS at URBANA-CHAMPAIGN, Electromagnetic Communication Laboratory, Electrical and Computer Engineering, Urbana, IL 61801, USA	10/90-9/92
Research and Teaching Assistant UNIVERSITY OF ILLINOIS at URBANA-CHAMPAIGN, Electrical and Computer Engineering, Urbana, IL 61801, USA	1/86-10/90
Research and Teaching Assistant MIDDLE EAST TECHNICAL UNIVERSITY, Electrical and Electronics Engineering, Ankara, Turkey	9/82-12/83 and 1/85-1/86
Electronic Maintenance Engineer Arabian Cement Company, Rabigh, Jiddah, Saudi Arabia	1/84-1/85
Research Engineer ASELSAN Military Electronic Ind. Ankara, Turkey	6/81-9/82

## **RESEARCH**

Characterization of Layered media and Near-Field Optics;  
Development of efficient CAD software for planar geometries;  
Propagation Models and Coverage Prediction for mobile radio systems;  
Design and analysis of multi-function microstrip antennas;  
Study and application of numerical techniques, such as Method  
of Moments (MoM) in spatial and spectral domains, Finite-  
Difference Time-Domain (FDTD) and Finite Elements (FE);  
Derivation of closed-form, spatial-domain Green's functions.

## PUBLICATIONS

1. Jon S. Gedymen, **M. I. Aksun**, "Rid noise from tests of unstable transistors," *Microwaves&RF*, Vol.25, pp. 113-116, Oct. 1986.
2. T. Henderson, **M. I. Aksun**, C. K. Peng, H. Morkoc, P. C. Chao, P. M. Smith, K. H. G. Duh, and L. F. Lester, " Microwave performance of a quarter-micrometer gate low-noise pseudomorphic InGaAs/AlGaAs modulation-doped field effect transistor," *IEEE Electron Device Lett.*, Vol. EDL-7, pp. 649-651, Dec. 1986.
3. **M. I. Aksun**, H. Morkoc, L. F. Lester, K. H. G. Duh, P. M. Smith, P. C. Chao, M. Longerbone, and L. P. Erickson, " Performance of quarter-micron GaAs metal-semiconductor field-effect transistors on Si substrates," *Appl. Phys. Lett.*, Vol. 49, pp. 1654-1655, Dec. 1986.
4. C. K. Peng, **M. I. Aksun**, A. A. Ketterson, H. Morkoc, and K. R. Gleason, " Microwave performance of InAlAs/InGaAs/InP MODFET's," *IEEE Electron Device Lett.*, Vol. EDL-8, pp.24-26, Jan. 1987.
5. **M. I. Aksun** and H. Morkoc, " Characteristics of shielded microstrip lines on GaAs-Si at millimeter-wave frequencies," in *Picosecond Electronics and Optoelectronics II*, Ed. by F. J. Leonberger, C. H. Lee, F. Capasso, H. Morkoc, Springer Ser. in Electronics and Photonics, Vol. 24 (Springer-Verlag, Berlin, Heidelberg 1987), pp. 188-192.
6. **M. I. Aksun** and H. Morkoc, " GaAs on Si as a substrate for microwave and millimeter-wave monolithic integration," *IEEE Trans. Microwave Theory Tech.*, Vol. MTT-36, pp. 160-162, Jan. 1988.
7. **M. I. Aksun**, Z. H. Wang, S. L. Chuang, and Y. T. Lo, " Double-slot-fed microstrip antennas for circular polarization operation," *Microwave and Optical Technology Letter*, Vol. 2, pp. 343-346, Oct. 1989.
8. **M. I. Aksun**, S. L. Chuang, and Y. T. Lo, " On slot-coupled microstrip antennas and their applications to CP operation- theory and experiment," *IEEE Trans. Antennas Propagat.*, Vol. AP-38, pp. 1224-1230, Aug. 1990.
9. **M. I. Aksun**, S. L. Chuang, and Y. T. Lo, " Coplanar waveguide-fed microstrip antennas," *Microwave and Optical Technology Letter*, Vol. 4, pp. 292-295, July 1991.
10. **M. I. Aksun**, S. L. Chuang, and Y. T. Lo, " Analysis of a slot excited by a semi-infinite microstrip transmission line," *Journal of Electromagnetic Waves and Applications*, Vol. 6, No. 3, pp. 341-358, 1992.
11. Rugui Yang, Y. T. Lo, **M. I. Aksun**, and S. L. Chuang, " Simple and efficient analysis for a slot-coupled patch antenna with a microstrip line feed," *Microwave and Optical Technology Letter*, Vol. 4, pp. 335-341, Aug. 1991.
12. **M. I. Aksun** and R. Mittra, " Derivation of closed-form Green's functions for a general microstrip geometry," *IEEE Trans. Microwave Theory Tech.*, Vol. MTT-40, pp. 2055-2062, Nov. 1992.
13. **M. I. Aksun** and R. Mittra, " Estimation of spurious radiation from microstrip etches using closed-form Green's functions," *IEEE Trans. Microwave Theory Tech.*, Vol. MTT-40, pp. 2063-2069, Nov. 1992.
14. **M. I. Aksun** and R. Mittra, " Choices of expansion and testing functions for the method of moments in electromagnetic problems," *IEEE Trans. Microwave Theory Tech.*, Vol. MTT-41, pp.503-509, March 1993.
15. **M. I. Aksun** and R. Mittra, " Spurious radiation from microstrip interconnects," *IEEE Trans. Electromagn. Compat.*, Vol. 35, pp. 148-158, May 1993.
16. W. Lee Ko, **M. I. Aksun**, and R. Mittra, " A generalized eigenvalue method for FDTD analyses," *Microwave and Optical Technology Letter*, Vol. 6, pp. 552-554, July 1993.

17. Ikmo Park, R. Mittra, and **M. I. Aksun**, "Numerically efficient analysis of planar microstrip configurations using closed-form Green's functions," *IEEE Trans. Microwave Theory Tech.*, Vol. MTT-43, pp. 394-400, Feb. 1995.
18. G. Dural and **M. I. Aksun**, "Closed-form Green's functions for general sources and stratified media," *IEEE Trans. Microwave Theory Tech.*, Vol. MTT-43, pp. 1545-1552, July 1995.
19. Noyan Kinayman and **M. I. Aksun**, "Comparative study of acceleration techniques for integrals and series in electromagnetic problems," *Radio Science*, Vol. 30, pp. 1713-1722, Nov.-Dec. 1995.
20. **M. I. Aksun** and G. Dural, "Comparative study of absorbing boundary conditions using Green's functions," *IEEE Tran. Antennas Propagat.*, Vol. AP-44, pp. 152-156, Feb. 1996.
21. **M. I. Aksun**, "A robust approach for the derivation of closed-form Green's functions," *IEEE Trans. Microwave Theory Tech.*, Vol. MTT-44, pp. 651-658, May 1996.
22. Lale Alatan, **M. I. Aksun**, K. Mahadevan, and T. Birand, "Analytical evaluation of the MoM matrix elements," *IEEE Trans. Microwave Theory Tech.*, Vol. MTT-44, pp. 519-525, April 1996.
23. Levent Gurel and **M. I. Aksun**, "Electromagnetic scattering solution of conducting strips in layered media using the fast multipole method," *IEEE Microwave Guided Wave Lett.*, Vol. 6, pp. 277-279, Aug. 1996.
24. Noyan Kinayman and **M. I. Aksun**, "Efficient use of closed-form Green's functions for the analysis of planar geometries with vertical connections," *IEEE Trans. Microwave Theory Tech.*, Vol. MTT-45, pp. 593-603, May 1997.
25. Noyan Kinayman and **M. I. Aksun**, "Efficient and accurate EM simulation technique for analysis and design of MMICs," *Int. J. Microwave Millimeter-Wave Computer-Aided Eng.*, vol. 7, pp. 344-358, Sept. 1997.
26. Noyan Kinayman, G. Dural, and **M. I. Aksun**, "A numerically efficient technique for the analysis of slots in multilayer media," *IEEE Trans. Microwave Theory Tech.*, Vol. MTT-46, pp. 430-432, April 1998.
27. Lale Alatan, **M. I. Aksun**, K. Leblebicioglu, and T. Birand, "Use of computationally efficient MoM in the optimization of printed structures," *IEEE Trans. Antennas Propagation*, vol. AP-47, pp. 725-732, April 1999.
28. Noyan Kinayman and **M. I. Aksun**, "Efficient evaluation of the MoM matrix entries for planar geometries in multilayer media," *IEEE Trans. Microwave Theory Tech.*, vol. MTT-48, pp. 309-312, Feb. 2000.
29. **M. I. Aksun**, Fatma Caliskan, and Levet Gurel, "An efficient method for electromagnetic characterization of 2-D geometries in stratified media," *IEEE Trans. Microwave Theory Tech.*, vol. MTT-50, pp. 1264-1274, May 2002.
30. Ozlem Ozgun, Selma Mutlu, **M. I. Aksun**, and Lale Alatan, "Design of dual-band patch antennas with slots and shorting pins via genetic algorithms," *IEEE Trans. Antennas Propagation*, vol. AP-51, pp. 1947-1954, Aug. 2003.
31. L. Moisev, C. Cantor, **M. I. Aksun**, M. Dogan, B. B. Goldberg, A. K. Swan and M. S. Unlu, "Spectral self-interference fluorescence microscopy," *Journal of Applied Physics*, vol. 96, pp. 5311-5315, Nov. 1, 2004.
32. **M. I. Aksun** and Gulbin Dural, "Clarification of issues on the closed-form Green's functions in stratified media," *IEEE Trans. Antennas Propagation*, vol. AP-53, pp. 3644-3653, Nov. 2005.
33. T. Onal, **M. I. Aksun** and N. Kinayman, "An efficient full-wave simulation algorithm of multiple vertical conductors in printed circuits," *IEEE Trans. Microwave Theory Tech.*, vol. 54, pp. 3739 – 3745, Oct. 2006.

34. T. Onal, **M. I. Aksun** and N. Kinayman, "A rigorous and efficient analysis of 3D printed circuits: vertical conductors arbitrarily distributed in multilayer environment," Accepted for publication in IEEE Trans. Antennas Propagat.
35. **M. I. Aksun**, A. Alparslan, E. Pinar Karabulut, Erdinc Irci, and Vakur B. Ertürk, "Determining the effective constitutive parameters of finite periodic structures: Photonic Crystals and Metamaterials," submitted for publication in IEEE Trans. Microwave Theory Tech.
36. E. Pinar Karabulut and **M. I. Aksun**, "A novel method for the characterization of finite general photonic crystals," in preparation to be submitted for publication in Phys. Rev. E.

## **BOOK, BOOK CHAPTERS and TECHNICAL REPORTS**

1. **M. I. Aksun** and R. Mittra, "Investigation of Radiation Characteristics of Microstrip Etches," University of Illinois at Urbana-Champaign, Technical Report No. UILU-ENG-92-2210, Mar. 1992
2. **M. I. Aksun** and R. Mittra, "Closed-Form Green's Functions and Their Use in the Method of Moments," World Scientific Publishing Company, Electromagnetic Wave Interactions, pp. 1-37, edited by A. Guran, R. Mittra and P. J. Moser, Series on Stability, Vibration and Control of Systems Series B: Vol. 12, 1996.
3. Noyan Kinayman and **M. I. Aksun**, "EMPLAN: Electromagnetic Analysis of Printed Structures in Planarly Layered Media," Software and User's manual, Artech House, Boston, 2000.
4. Noyan Kinayman and **M. I. Aksun**, "Modern Microwave Circuits," Artech House, Boston, 2005.
5. T. Onal, **M. I. Aksun** and N. Kinayman, "Analysis of Multiple Vertical Strips in Planar Geometries via DCIM-MoM," Complex Computing Networks, Springer in Physics Series, vol. 104, pp. 133-140, Jan. 2006.

## **CONFERENCE PAPERS**

1. **M. I. Aksun**, H. Morkoc, L. F. Lester, K. H. G. Duh, P. M. Smith, P. C. Chao, M. Longebone, and L. P. Erickson, "Microwave characterization of quarter-micron GaAs metal Semiconductor field effect transistors on Si substrates," International Electron Devices Meeting, Los Angeles, California, Dec. 7-10, 1986.
2. **M. I. Aksun**, C. K. Peng, A. Ketterson, H. Morkoc, and R. Gleason, "High frequency modulation doped field effect transistors in InAlAs/InGaAs/InP material system," International Electron Devices Meeting, Los Angeles, California, Dec. 7-10, 1986.
3. T. Henderson, **M. I. Aksun**, C. K. Peng, H. Morkoc, P. C. Chao, P. M. Smith, K. H. G. Duh, and L. F. Lester, "Power and noise performance of the pseudomorphic modulation doped field effect transistor at 60 GHz," International Electron Devices Meeting, Los Angeles, California, Dec. 7-10, 1986.
4. **M. I. Aksun** and H. Morkoc, "Characteristics of shielded microstrip lines on GaAs-Si at millimeter-wave frequencies," Topical Meeting on Picosecond Electronics and Optoelectronics. OSA-IEEE(LEOS), Incline Village, Nevada, Jan. 14-16, 1987.
5. **M. I. Aksun**, Z. H. Wang, S. L. Chuang, and Y. T. Lo, "Circular polarization operation of double slot-fed microstrip antennas," IEEE AP-S International Symposium, San Jose, California, June 26-30, 1989.
6. **M. I. Aksun**, S. L. Chuang, and Y. T. Lo, "Theory and experiment of electromagnetically excited microstrip antennas for circular polarization operation," IEEE AP-S International Symposium, San Jose, California, June 26-30, 1989. (Invited paper).

7. **M. I. Aksun** and R. Mittra, " Calculation of the Fresnel region fields based upon the Wilcox expansion theorem of electromagnetic fields," IEEE AP-S International Symposium, Dallas, Texas, May 7-11, 1990.
8. **M. I. Aksun** and R. Mittra, " Derivation of closed-form spatial Green's functions for printed circuit structures with substrates and superstrates," IEEE AP-S International Symposium, Ontario, Canada, June 24-28, 1991.
9. R. Mittra and **M. I. Aksun**, " Estimation of spurious radiation from electronic packages," Topical Meeting on Electrical Performance of Electronic Packaging, Tuscon, Arizona, April 22-24, 1992.
10. **M. I. Aksun**, I. Park, and R. Mittra, " Efficient calculation of spurious radiation from microstrip interconnects," IEEE AP-S International Symposium, Chicago, Illinois, July 18-25, 1992.
11. **M. I. Aksun**, " Admissible class of basis and testing functions for the method of moments in electromagnetic problems," IEEE AP-S International Symposium, Chicago, Illinois, July 18-25, 1992.
12. R. Mittra, R. Yang, **M. I. Aksun**, M. Itoh, and M. Arakawa, " A new high performance GPS antenna design," ION GPS-92, ION Satellite Division's 5th International Meeting, September 16-18, 1992.
13. I. Park, R. Mittra, and **M. I. Aksun**, " Analysis of microstrip patch antennas with tuning stubs using the closed-form Green's functions," IEEE AP-S International Symposium, Ann Arbor, Michigan, June 27-July 2, 1993.
14. **M. I. Aksun**, " On the use of discontinuous expansion and testing functions in the method of moments for electromagnetic problems," IEEE AP-S International Symposium, Ann Arbor, Michigan, June 27-July 2, 1993.
15. **M. I. Aksun**, and G. Dural, " Closed-form Green's functions of HED, HMD, VED, and VMD for multilayer media," IEEE AP-S International Symposium, Ann Arbor, Michigan, June 27-July 2, 1993.
16. **M. I. Aksun**, and R. Mittra, " Efficient use of closed-form Green's functions for three-dimensional problems involving multilayered media," IEEE AP-S International Symposium, Seattle, Washington, June 19-24, 1994.
17. Lale Hayirlioglu, **M. I. Aksun**, and T. Birand, " Improving the numerical efficiency of the method of moments for printed geometries," IEEE AP-S International Symposium, Seattle, Washington, June 19-24, 1994.
18. G. Dural, and **M. I. Aksun**, " Analysis of slot-lines using closed-form Green's functions," URSI Radio Science Meeting, Seattle, Washington, June 19-24, 1994.
19. **M. I. Aksun**, and R. Mittra, " Characterization of via holes in microstrip geometries," URSI Radio Science Meeting, Seattle, Washington, June 19-24, 1994.
20. G. Dural and **M. I. Aksun**, " Closed-form Green's functions for the efficient use in the method of moments," Progress in Electromagnetic Research Symposium (PIERS), Noordwijk, The Netherlands, July 11-15, 1994.
21. **M. I. Aksun**, and G. Dural, " Comparative evaluation of absorbing boundary conditions using Green's functions for layered media," IEEE AP-S International Symposium, Newport Beach, California, June 18-23, 1995.
22. **M. I. Aksun**, " Efficient and robust approach for the derivation of closed-form Green's function," IEEE AP-S International Symposium, Newport Beach, California, June 18-23, 1995.
23. Noyan Kinayman, and **M. I. Aksun**, " Comparative study of acceleration techniques for integrals and series in electromagnetic problems," IEEE AP-S International Symposium, Newport Beach, California, June 18-23, 1995.

24. Lale Alatan, **M. I. Aksun**, and T. Birand," Computationally efficient analysis and design of printed structures," IEEE AP-S International Symposium, Baltimore, Maryland, July 21-26, 1996.
25. Levent Gurel and **M. I. Aksun**," Fast multipole method in layered media: 2-D electromagnetic scattering problems," IEEE AP-S International Symposium, Baltimore, Maryland, July 21-26, 1996.
26. Lale Alatan, **M. I. Aksun**, K. Leblebicioglu, and M. T. Birand," Computationally efficient MoM and its applications," The 13th Annual ACES Symposium, Monterey, California, March 17-21, 1997
27. Noyan Kinayman and **M. I. Aksun**," Efficient iterative method for electromagnetic scattering calculation of large objects," PIERS, July 7-11, 1997
28. Noyan Kinayman, **M. I. Aksun** and R. Mittra," On the evaluation of spatial domain MoM matrix entries containing closed-form Green's functions," IEEE AP-S International Symposium, Montreal, Quebec, July 13-18, 1997.
29. Fatma Caliskan, **M. I. Aksun**, and L. Gurel," Efficient methods for electromagnetic characterization of 2-D geometries in stratified media," IEEE AP-S International Symposium, Atlanta, Georgia, June 21-26, 1998.
30. A. Altıntaş, **M. I. Aksun**, Ö. Balta, H. Köymen, S. Topcu and V. Yurchenko, "GIS-Aided propagation prediction study for broadcast and telecommunication services," Proc. of Virginia Tech's Tenth Symposium on Wireless Personal Communications, Virginia-USA, June 2000.
31. A. Altıntaş, **M. I. Aksun**, S. Topcu, H. Köymen, V. Yurchenko, E. Yetginer, Ö. Yılmaz, "Comparison of various propagation models on real terrain: difficulties and remedies," U.R.S.I. National Radio Science Meeting, Salt Lake City, Utah, July 16-21, 2000.
32. Selma Mutlu and **M. I. Aksun**," Hybrid model for probe-fed rectangular microstrip antennas with shorting pins," IEEE AP-S International Symposium, Salt Lake City, Utah, July 16-21, 2000.
33. S. Topcu, H. Köymen, A. Altıntaş, **M. I. Aksun**, "Propagation prediction and planning tools for digital and analog terrestrial broadcasting and land mobile services," Proc. of 50th Annual Broadcast Symposium, Virginia-USA, Sept. 2000.
34. S. Topcu, H. Köymen, A. Altıntaş, **M. I. Aksun**, "A GIS aided frequency planning tool for terrestrial broadcasting and land mobile services," NATO Advanced Research Workshop on GIS for Emergency Preparedness and Health Risk Reduction, Budapest-Hungary, April 2001.
35. **M. I. Aksun**, M. Emre Yavuz, G. Dural," Comments on the problems in DCIM," IEEE AP-S International Symposium, Columbus, Ohio, June 22-27, 2003.
36. M. E. Yavuz, **M. I. Aksun**, N. Kinayman," An Efficient Approach for the Analysis of Printed Geometries with Multiple Vertical Metallizations and Their Optimization," IEEE AP-S International Symposium, Columbus, Ohio, June 22-27, 2003.
37. **M. I. Aksun** "Kapalı-Form Green fonksiyonları – Yöntem, Sorunlar ve Uygulamalar," URSI – Türkiye 2004, 2. Ulusal Kongresi, 8-10 Eylül 2004. (Invited).
38. **M. I. Aksun**, T. Onal, "Critical Study of DCIM, and Development of Efficient Simulation Tool for 3D Printed Structures in Multilayer Media," PIERS 2006 in Cambridge, 26-29 March 2006.
39. **M. I. Aksun**, "Momentler Yöntemi ve Kapalı-Form Green Fonksiyonları Karma Yöntemindeki Son Gelişmeler," URSI – Türkiye 2006, 4. Ulusal Kongresi, 6-8 Eylül 2006. (Invited).
40. **M. I. Aksun**, "Current Status of the Combination of Method of Moments and DCIM," IVth International Workshop on Electromagnetic Wave Scattering, Gebze, Kocaeli, Türkiye, September 18-22, 2006. (Invited)
41. **M. I. Aksun**, "Efficient analysis of printed structures in multilayered media," LEMA-EPFL Workshop on Numerical Electromagnetics, EPFL, Lausanne, Switzerland, July 16-17, 2007. (Invited)

42. **M. I. Aksun**, “Homogenization of General Periodic Structures: Photonic Crystals and Metamaterials,” LEMA-EPFL Workshop on Numerical Electromagnetics, EPFL, Lausanne, Switzerland, July 16-17, 2007. (Invited)