

BIOGRAPHICAL DATA

ALADIN H. KAMEL

Degrees:

- 1975:** B.S. Electrical Engineering (Communication and Electronics) (Distinction with honor degree) Ain Shams University, Cairo, Egypt.
- 1978:** B.S. Applied Mathematics and Theoretical Physics (Distinction with honor degree) Ain Shams University, Cairo, Egypt
- 1981:** Ph.D., Techniques for Guided Propagation, Electrical Engineering Department, Polytechnic University, New York, USA.

Activities:

2002- Scientific/Technical Consultant and Visiting Professor, Communication and Electronics Dept., Faculty of Engineering, Ain Shams University.

1999-2001 Executive Director, Regional Information Information Technology Software Engineering Center, Cairo, Egypt.

1997-1998 Vice President, Resources and Quality, Regional Information Technology and Software Engineering Centre, Cairo, Egypt.

1995-1996 Program Manager, Environmental Information Technology and Systems Department, Regional Information Technology and Software Engineering Centre, Cairo, Egypt.

1987-1994 Deputy Centre Manager and Projects Manager, IBM World Trade Corporation (Bergen Scientific Centre-Norway).

Deputy Centre Manager contributing to day-to-day running of the centre, budget planning and control, resources planning and projects assessment and planning.

Projects Manager, leading the centres research and development activities in:

- Mathematical and numerical modeling of wave processes (Electromagnetic, Acoustic and Seismic); including algorithms development for vector multiprocessor architectures (e.g. IBM 3090-600 vector facility) and clustered networks of workstations.

- Mathematical and numerical methods for subsurface imaging using acoustic and electromagnetic reflection data.
- Use of advanced workstations in scientific computing and in 3-D visualization of numerical simulation results.
- Digital image processing of satellite images.
- Heterogeneous distributed databases.

1986-1987 Manager, IBM World Trade Corporation (Kuwait Scientific Center).

Research and development activities in large scale scientific computing, Digital image processing, Satellite remote sensing, Environmental sciences, Natural language processing, Speech synthesis, and PC based education.

1985-1986 Project Leader, IBM World Trade Corporation (Kuwait Scientific Center).

Conducting research in:

- Wave phenomena modeling; including algorithms development for parallel/vector machines (FPS 164, IBM 4381 and IBM 3090-200 vector facility).
- 3-D data manipulation and display.
- PC based image processing applications.

1983-1985 Scientist, IBM World Trade Corporation (Kuwait Scientific Center).

Conducting research in:

- Digital image processing applications.
- Satellite remote sensing.
- Physical, mathematical and numerical modeling of air pollution.

1981-1983 Assistant Professor, Electrical Engineering Department, Polytechnic University, New York.

Duties include teaching undergraduate/graduate courses and conducting sponsored research for National Science Foundation, Office of Naval Research, Joint Services Electronics and US Geological Survey in the area of analytical and numerical techniques for guided propagation (with applications in electrical engineering and geophysics).

1980-1981 Graduate Assistant, Electrical Engineering Department, Polytechnic University, New York. Also performed graduate studies in The Courant Institute of Mathematical Sciences, New York University.

1978-1980 Research Fellow, Electrical Engineering Department, Polytechnic University, New York. Also performed graduate studies in the Physics Department, The Graduate School of Arts and Science, New York University.

1975-1978 Instructor, Electrical Engineering Department, Faculty of Engineering, Ain Shams University, Cairo. Also performed research on electromagnetic boundary value problems (Ain Shams University) and on photon-phonon interaction in solid state materials (The American University in Cairo). Also performed graduate studies in The American University in Cairo and in Ain Shams University.

Publications:

1. Felsen, L.B. and Kamel, A., Hybrid ray-mode representation of parallel plane waveguide Greens functions, Technical Abstracts of the National Radio Science Meeting. Boulder, CO, November 1979.
2. Kamel, A. and Felsen, L.B., Hybrid ray-mode techniques for computational seismology, Technical Abstracts of the Solishan Lodge Workshop on Numerical seismology, March 1981.
3. Kamel A. and Felsen, L.B., More on rays as interfering modes, Technical Abstracts of the Acoustical Society Meeting, Ottawa, Canada, May 1981.
4. Felsen, L.B., and Kamel, A., Hybrid ray-mode representation of parallel plane waveguide Greens functions, IEEE Trans. AP-29, pp. 637-649, July 1981 (***Best paper award for 1981, Antennas and Propagation Society of the IEEE***).
5. Kamel, A. and Felsen, L.B., Hybrid ray-mode formulation of SH motion in a two-layer half space, Bulletin Seismol Soc. Am., 71, pp. 1763-1781, 1981.
6. Kamel, A., Niver, E., and Felsen, L.B., SH rays and modes in a two-layer earth model, with application to the Imperial Valley, Proceedings of the (USGS) workshop XVI on the Dynamic Characteristics of Faulting Inferred from Recordings of Strong Ground Motion, Oct., 1981.
7. Kamel, A. and Felsen, L.B., Resolvent formulation of the Greens function for a wedge shape ocean, Technical Abstracts of the Acoustical Society Meeting, Florida. December 1981.
8. Kamel, A. and Felsen, L.B., Resolvent Greens function for a tapered dielectric waveguide, Technical Abstracts of the National Radio Science Meeting, CO, January 1982.
9. Kamel, A. and Felsen, L.B., Spectral and hybrid ray-mode formulation for sound radiation in a weakly range dependent ocean, Technical Abstracts of the Acoustical Society Meeting, April 1982.
10. Niver, E., Kamel, A., and Felsen, L.B., Equivalent modes and generalized rays for sound fields near critically reflected and bottom-grazing rays, Technical Abstracts of the Acoustical Society Meeting, April 1982.
11. Kamel, A. and Felsen, L.B., On the ray equivalent of a group of modes, J. Acoust. Soc. Am. 71(6), pp. 1445-1452, June 1982.
12. Niver, E., Kamel, A., and Felsen, L.B., More on replacing transitional acoustic

- ray fields by a bundle of modes, Technical Abstracts of the Acoustical Society Meeting Orlando, Florida, November 1982.
13. Kamel, A. and Felsen, L.B., Spectral theory of sound propagation in an ocean channel with weakly sloping bottom, J. Acoust. Soc. Am. 73(4), pp. 1120-1130, April 1983.
 14. Lu, I.T., Felsen, L.B., and Kamel, A., Eigenrays and eigenmodes for source excited propagation in layered multiwave media, Technical Abstracts of the Acoustical Society Meeting, November 1983.
 15. Kamel, A. and Felsen, L.B., Hybrid Greens function for SH motion in a low velocity layer, Wave Motion 5, pp. 83-97, 1983.
 16. Lu, I.T., Felsen, L.B., and Kamel, A., Eigenreverberation, eigenmodes and hybrid combinations: A new approach to propagation in layered multiwave media, Wave Motion 6, pp. 435-457, 1984.
 17. Niver, E., Kamel, A., and Felsen, L.B., Modes to replace transitional asymptotic ray fields in a vertically inhomogeneous earth model, J.R. Astr. Soc. 80:2, pp. 289-312. Feb. 1985.
 18. Kamel, A., Kuwait Scientific Center experiences in scientific Computing, Proceedings of 1st Al-Ain University Conference on Computer Science Education. Al-Ain, U.A.E. May 1985.
 19. Metwalli, S.M., Kamel, A.H., and Saheb, A.A., Surface roughness effect on laser speckle spectral density, SPIEs Technical Symposium Southeast on Optics and Optoelectronic Systems, March 31-April 4, 1986, Orlando, Florida, USA.
 20. Kamel, A.H. Akashah, S.E., Leeri, F.A., and Fahim, M., Particle size distribution in oil-water dispersions using image processing, Computers and Chemical Engineering vol. 11, no. 4, pp. 435-439, 1987.
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 23. Kamel, A., IBM experimental parallel processing environment, workshop on Parallel processing on the IBM 3090, IBM Bergen Scientific Centre, Dec. 1987.
 24. Sguazzero, P., Kindelan, M., and Kamel, A., Parallelizm in seismic computations: Two case studies, in Parallel Systems and Computation, G. Almasi and G. Paul Eds. North-Holland, 1988, pp. 273-294.
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- Intl. Conf. On Vector and Parallel Comp. Tromso, Norway, June 6-10, 1988.
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 33. Sguazzero, P., Kindelan, M., and Kamel, A., Cost-effective and dispersion-bounded numerical integration of the elastodynamic equations, Proceedings of the International Conference on Spectral and High Order Methods for Partial Differential Equations, Como, Italy, June 26-29, 1989.
 34. Kamel, A., Interaction of inhomogeneous plane waves, head waves and guided modes with nonreflecting boundary condition for the time domain acoustic wave equation, Technical Abstracts of SIAM Workshop on Geophysical Inversion, Houston, Texas, Sept. 23-28, 1989.
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 39. Kamel, PFP experimental parallel processing environment, Workshop on Parallel Processing on the IBM 3090, IBM Bergen Scientific Centre, Nov. 1989.
 40. Piero Sguazzero, Vittorio Zecca, Aladin Kamel, Aldo Vesnaver and Geza Seriani, Elaborazione di dati geofisici, supercalcolatorie di lavoro, Note di Informatica, 01/1990; 22:4-17.
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86. Haitham Akah, Aladin Kamel and Hadia El-Hennawy, Adaptive pulse shaping for CD-OFDM synchronization, *ICEENG-2008*, May 27-29, MTC, Cairo, Egypt.
87. M. A. Salem and A. H. Kamel, "Diffraction by an infinite singly-negative material wedge", *Proceedings of Progress in Electromagnetic Research (Beijing, China)*, March 2009.
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0 Patents

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- 5Kamel, A.H., Leeri, F.A., Akashab, S.E., and Fahim, M., Chemical engineering applications of digital image processing: Particle area measurement, IBM KSC Tehnical Report No. 17, October 1985.
- 6 Kamel, A.H., Lerri, F.A., Fawzi F., Zaaarani, M., and Mukhyopadhaya. A., Comparison of aerial photos and satellites based methods in discriminating covered/uncovered areas in Kuwait city, IBM KSC Technical Report No. 15,

December 1985.

- 7Musa, A.H., Kamel, A., Reconstruction, display and manipulation of 3-D Data, IBM KSC Technical Report No. 25, November 1986.
- 8Kamel, A.H., Kindelan, M., and Sguazzero, P., Elastic modeling with Fourier methods on the IBM 3090 vector facility, IBM ECSEC Technical Report G513-4099, November 1986.
- 9Al-Shamemry, M., Kamel, A.H., and El-Rabaa, S.M., Structure mapping of enhanced Landsat images of southwest Jordan, IBM KSC Technical Report No. 24, December 1986.
- 10Wahab, S.A., Medi, S., and Kamel, A.H., Effect of dust on chemical air pollution in Kuwait, IBM KSC Technical Report No. 28, February 1987.
- 11Ramses, R., El-Dabi, S., and Kamel, A., A system for Arabic character recognition, IBM KSC Technical Report No. 27, January 1988.
- 12Carnevali, P., Kamel, A., Kindelan, M., Sguazzero, P., and Vitaletti, M., Numerically intensive computing with large storage sizes on the IBM 3090: User-direct paging under MVS/XA, IBM ECSEC Technical Report ICE-0025, October 1988.
- 13Kamel, A., Reichel, L., Gray, L., and Furnes, G., Numerically intensive computing, IBM BSC Technical Report 88/40.
- 14Kamel, A., Kindelan, M., and Sguazzero, P., Seismic computations on the IBM 3090 vector multiprocessor, IBM BSC Technical Report 88/49.
- 15Kamel, A., Accuracy of nonreflecting boundary conditions for the time domain wave equation, IBM BSC Technical Report 88/55.
- 16Boe. O., Hestholm, S., and Kamel, A., Comparative study of pseudospectral and Petrov-Galerkin numerical simulation of laboratory displacement experiments, IBM BSC Technical Report 90/02.
- 17Hestholm, S. and Kamel, A., Simulated annealing inversion applied to ducted propagation of acoustic waves, IBM BSC Technical Report 90/03.
- 18Aladin H. Kamel, Scattering of TM waves by an impedance cylinder immersed halfway between two half spaces, Report no. 04-306, Mathematical Physics Preprint Archive (http://www.ma.utexas.edu/mp_arc/).
- 19Aladin H. Kamel, Scattering of TE waves by an impedance cylinder immersed halfway between two half spaces, Report no. 04-307, Mathematical Physics Preprint Archive (http://www.ma.utexas.edu/mp_arc/).
- 20Aladin H. Kamel, Acoustic scattering by an impedance cylinder immersed halfway between two half spaces, Report no. 04-308, Mathematical Physics Preprint Archive (http://www.ma.utexas.edu/mp_arc/).
- 21 Aladin H. Kamel, Acoustic fields in the presence of an impedance cone, Report no. 15-70, Mathematical Physics Preprint Archive (http://www.ma.utexas.edu/mp_arc/).
- 22 Aladin H. Kamel, Acoustic diffraction by an impedance wedge, Report no. 15-71, Mathematical Physics Preprint Archive (http://www.ma.utexas.edu/mp_arc/).

Master Degrees

Students from the EE Department of the Faculty of Engineering, Ain Shams University working in the areas of

- a)Non-linear inverse scattering (Granted 1998)

- b) Neural networks approach for blind beamforming based on transmitted signal properties (Granted 2004)
- c) RF Dynamic channels allocation for mobile networks (Granted 2004)
- d) Localized waves generation using guided structures modes (Granted 2004)
- e) OFDM synchronization with pulse shaping (Granted 2005)
- f) Investigation of Ultrawideband antennas (Granted 2007)
- g) Solution of Microwave problems using VIE (Granted 2016)
- h) Seeing behind partially reflecting materials (Granted 2017)

Ph. D. Degrees

Students from the EE Department of the Faculty of Engineering, Ain Shams University working in the areas of

- a) Electromagnetic diffraction in the presence of material wedges (Granted 2008).
- b) Adaptive pulse shaping for OFDM system (Granted 2010).
- c) Electromagnetic diffraction through sub wavelength apertures (Granted 2012).
- d) Detection of landmines using innovative techniques (Granted 2013).
- e) Solution to Pauli-Schrodinger equation (on going)

Senior Graduation Projects

Projects conducted under my supervision for partial fulfillment of the B.S. in Communications and Electronics Engineering degree; Ain Shams University,

Class of 1995/1996:

- 1 Application of simulated annealing to electromagnetic inversion.
- 2 Neural Networks for electromagnetic inversion.
- 3 FDTD techniques for electromagnetic propagation in conducting media.
- 4 FDTD techniques for electromagnetic propagation in lossless media.

Class of 1996/1997:

- 5 Wavelets signal compression.
- 6 Wavelets image compression.
- 7 Wavelets video compression.
- 8 Fractals signal compression.
- 9 Fractals image compression.
- 10 Fractals video compression.
- 11 Propagation/depropagation in pre-stack depth migration of seismic data
- 12 Simulated annealing approach for seismic waves extrapolation operators design
- 13 Non-reflecting boundary conditions for seismic wave extrapolation
- 14 Velocity analysis for pre-stack depth migration
- 15 Electromagnetic missiles: sources and fields
- 16 Electromagnetic bullets of the Bessel-Gauss type: sources and fields
- 17 Electromagnetic bullets of the EDEPT type: sources and fields

Class of 1997/1998:

- 18 Neural Nets Applications in Wave Propagation: Vertically Inhomogeneous Velocity profiles
- 19 Neural Nets Applications in Wave Propagation: Parallel Layered Media

- 20Neural Nets Applications in Wave Propagation: Curved Layered Media
- 21Neural Nets Applications in Seismic Inversion: Vertically Inhomogeneous Velocity profiles
- 22Neural Nets Applications in Seismic Inversion: Parallel Layered Media
- 23Neural Nets Applications in Seismic Inversion: Curved Layered Media
- 24Electromagnetic Bullets Field Design: EDEPT Type
- 25Electromagnetic Bullets Source Design: EDEPT Type
- 26Electromagnetic Bullets Field Design: Gauss-Bessel Type
- 27Electromagnetic Bullets Source Design: Gauss-Bessel Type
- 28Electromagnetic Bullets Scattering: EDEPT Type
- 29Electromagnetic Bullets Scattering: Gauss-Bessel Type
- 30Electromagnetic Bullets Field Design for Fiber Optic Cables: MPS Type
- 31Electromagnetic Bullets Source Design for Fiber Optic Cables: MPS Type
- 32Electromagnetic Bullets Fields and Sources for Metallic Cylindrical Waveguides

Class of 1998/1999:

- 33Neural Nets Applications in Acoustic Inversion: Density, Incompressibility and Parallel Layers Thickness
- 34Neural Nets Applications in Acoustic Inversion: Density, Incompressibility and Curvature of Layers
- 352-D Pre-stack Depth Migration for Acoustic Media: Detailed Analysis
- 36Inversion of Acoustic reflection data using Genetic Algorithms

Class of 1999/2000:

- 37The application of localized electromagnetic waves for discovering hidden objects
- 38The application of localized acoustic waves for discovering hidden objects
- 39 The application of localized electromagnetic waves for neutralizing land mines
- 40The application of localized acoustic waves for neutralizing hidden mines

Class of 2000/2001

- 41Sources of localized electromagnetic waves
- 42Sources of localized acoustic waves
- 43Holey fibers propagation characteristics
- 44Holey fibers for dispersion compensation

Class of 2002/2003

- 45Coupled modes-based localized electromagnetic waves source design
- 46Coupled modes-based localized acoustic waves source design
- 47Semi-numerical propagation models for linear inhomogeneous dispersive and lossy electromagnetic media
- 48Semi-numerical propagation models for linear inhomogeneous dispersive and lossy acoustic media

Class of 2012/2013

- 49 Inverse scattering and imaging for breast cancer detection.

Consultation:

- 1.Asymptotic analysis of acoustic propagation in a range-dependent ocean

- environment (for the Office of Naval Research, USA), 1983
2. Visiting Scientist, IBM Europe Center for Scientific and Engineering Computing (ECSEC), Rome, Italy: about 4 months per year between 1985 and 1992 working on computer architecture performance analysis for intensive computing applications.
 3. Visiting Scientist, Regional Information Technology and Software Engineering Center, Cairo, Egypt: two months in 1992 working on environmental information systems and applications.
 4. Applications of Holey Fibers, Gazillionbits, Palo Alto, CA, USA, 2000
 5. Chief Technical Advisor (Egypt Center), World bank project on Distance Education, July 2000 March 2002.

Professional Education:

- IBM School, relational database management systems, USA, 1989.
- IBM Workshops on scientific and technical computing, USA, 1988.
- IBM Workshops on vector and parallel processing, USA, 1987.
- IBM Workshops on parallel applications, Austria, 1986.
- IBM School, management course, Belgium, 1986.

Nationality:

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