

**Kamal Sarabandi, Fellow, IEEE,**  
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UNIVERSITY OF MICHIGAN

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**Role in the Center: Principal Investigator**

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**Areas of Research:** Miniaturized Antennas and Filters,  
Millimeter wave navigation system

#### **A. PROFESSIONAL PREPARATION**

**Sharif University of Technology**  
**University of Michigan**  
**University of Michigan**  
**University of Michigan**

Electrical Engineering B.S.E.E., 1980  
Electrical Engineering M.S., 1986  
Mathematics M.S., 1989  
Electrical Engineering Ph.D., 1989

#### **B. APPOINTMENTS**

<b>Director</b> , The Radiation Laboratory	9/2000-present
<b>Professor</b> , EECS Department, University of Michigan	9/2001-present
<b>Associate Professor</b> , EECS Department, University of Michigan	9/1996-8/2001
<b>Assistant Professor</b> , EECS Department, University of Michigan	9/1992-8/1996
<b>Assistant Research Scientist</b> , EECS Department, University of Michigan	9/1989-8/1992

#### **C. SYNERGISTIC ACTIVITIES**

Professor Sarabandi has 22 years of experience with RF sensors, radar systems, communication channel modeling, and is leading a large research group including three research scientists, 12 Ph.D. and 2 M.S. students. Over the past 16 years, he has graduated 24 Ph.D. and numerous M.S. students. He has served as the Principal Investigator on many projects sponsored by ARO, ONR, ARL, NSF, DARPA, NASA, JPL and many industries. He has published many book chapters and more than 140 papers in refereed journals on antenna and filter miniaturizations, random media modeling, wave propagation, millimeter-wave radar phenomenology and system design, and microwave sensors. He has also had more than 340 papers and invited presentations in many national and international conferences and symposia on similar subjects. Professor Sarabandi is a Fellow of IEEE, vice president and of the IEEE Geoscience and Remote Sensing Society (GRSS), past chairman of the Awards Committee of the IEEE GRSS, and IEEE Technical Activities Board Awards Committee. In 2006 he was appointed as a member NASA Advisory Council for a period of three years by the NASA Administrator. He served as the Associate Editor of the IEEE Transactions on Antennas and Propagation (AP) and the IEEE Sensors Journal. He is also a member of Commission F of URSI. Dr. Sarabandi has received many awards including the Henry Russel Award from the Regents of The University of Michigan. In 1999 he received a GAAC Distinguished Lecturer Award from the German Federal Ministry for Education, Science, and Technology given to about ten individuals worldwide in all areas of engineering, science, medicine, and law. He was also a recipient of a 1996 EECS Department Teaching Excellence Award and a 2004 College of Engineering Research Excellence Award. In 2005 he received, the IEEE Geoscience and Remote Sensing Distinguished Achievement Award (the highest IEEE GRSS Award) and the 2005 University of Michigan Faculty Recognition Award. In the past several years, joint papers presented by his students at a number of symposia (IEEE AP '95, '97, '00, '01, '03, '05', '06, IEEE IGARSS '99, '02, IEEE IMS '01, URSI '04,'05,'06) have received top three student prize paper awards. He also received the best paper Award at the 2006 Army Science Conference for his collaborative work with CERDEC in the design of a low-profile miniaturized metamaterial antenna for Army ground vehicles.

#### **D. RELATED PUBLICATIONS**

1. Hong, W., N. Behdad, and K. Sarabandi, "Size Reduction of Cavity-Backed Slot Antennas," *IEEE Transactions on Antennas and Propagation*, vol. 54, no. 5, pp. 1461-1465, May 2006.
2. Behdad, N., and K. Sarabandi, "Dual-Band Reconfigurable Antenna With a Very Wide Tunability Range," *IEEE Transactions on Antennas and Propagation*, vol. 54, no. 2, pp. 409-416, February 2006.
3. Behdad, N., and K. Sarabandi, "A Varactor-Tuned Dual-Band Slot Antenna," *IEEE Transactions on Antennas and Propagation*, vol.54, no.2, pp. 401-408, February 2006.
4. Behdad, N., and K. Sarabandi, "A Compact Antenna for Ultrawide-Band Applications," *IEEE Transactions on Antennas and Propagation*, vol. 53, no. 7, pp. 2185-2192, July 2005.
5. Behdad, N., and K. Sarabandi, "A Wideband Slot Antenna Design Employing A Fictitious Short Circuit Concept," *IEEE Transactions on Antennas and Propagation*, vol. 53(1), January 2005.
6. Aryanfar, F., and K. Sarabandi, "Compact MM-Wave Filters using Distributed Capacitively Loaded CPW Resonators," *IEEE Transactions on Microwave Theory and Techniques*, Vol. 54, no. 3, pp. 1161 - 1165, March 2006.
7. Aryanfar, F., and K. Sarabandi, "Characterization of Semilumped CPW Elements for Millimeter-Wave Filter Design," *IEEE Transactions on Microwave Theory and Techniques*, vol. 53, no.4, pp. 1288-1293, April 2005.
8. Azadegan, R., and K. Sarabandi, "Miniature High-Q Double-Spiral Slot-Line Resonator Filters," *IEEE Transactions on Microwave Theory and Techniques*, vol. 52(5), pp. 1548-1557, May 2004.
9. Mosallaei, H., and K. Sarabandi, "Antenna Miniaturization and Bandwidth Enhancement Using a Reactive Impedance Substrate," *IEEE Transactions on Antennas and Propagation*, vol. 52, no. 9, pp. 2403-2414, September 2004.
10. Sarabandi, K., and R. Azadegan, "Design of an Efficient UHF Planar Antenna," *IEEE Transactions on Antennas and Propagation*, vol. 51(6), pp. 1270-1276, June 2003.
11. Azadegan, R., and K. Sarabandi, "A Novel Approach for Miniaturization of Slot Antennas," *IEEE Transactions on Antennas and Propagation*, vol. 51(3), pp. 421-429, March 2003.
12. Abbaspour-Tamijani, A., and K. Sarabandi, "An Affordable Millimeter-Wave Beam-Steerable Antenna Using Interleaved Planar Subarrays," *IEEE Transactions on Antennas and Propagation*, vol. 51, no. 9, pp. 2193-2203, September 2003.
13. Koh, I.S., and K. Sarabandi, "Polarimetric Channel Characterization of Foliage for Performance Assessment of GPS Receivers Under Tree Canopies," *IEEE Transactions on Antennas and Propagation*, vol. 50, no. 5, pp. 713-726, May 2002.

#### **E. RELATED PATENTS**

1. Sarabandi, K., "Reconfigurable Slot Antennas for VHF/UHF Applications", Disclosure submitted to University of Michigan Intellectual Property Office, February 2002. File no. UM2269.
2. Sarabandi, K., "Slot Antennas", July 11, 2006, USPTO Patent Number: 7,075,493.
3. Sarabandi, K., "Electro-Ferromagnetic, Tunable Electromagnetic Band-Gap, and Bi-Anisotropic Composite Media Using Wire Configurations", August 23, 2005, USPTO Patent Number: 6,933,812
4. Sarabandi, K., "Multifunction Antenna", June 14, 2005, USPTO Patent Number: 6,906,669.
5. Sarabandi, K., "Multifunction Antenna for Wireless and Telematic Applications", Dec. 16 2003, USPTO Patent Number: 6,664,932.
6. Sarabandi, K., "Integrated Planar Antenna Printed on a Compact Dielectric Slab Having an Effective Dielectric Constant", January 21, 2003, USPTO Patent Number: 6,509,880.
7. Sarabandi, K., "Low Cost Compact Omni-Directional Printed Antenna," November 2002, USPTO Patent Number: 6,480,162.
8. Sarabandi, K., "A Planar Antenna Including a Superstrate Lens Having an Effective Dielectric Constant", June 27, 2000, USPTO Patent Number: 6,081,239.