Ryoichi SATO, Dr. Eng.

Professor
Program: Electrical and Information Engineering
Area: Information Engineering
Undergraduate: Dept. of Education

Professional Expertise

His professional expertise encompasses electromagnetic wave scattering and diffraction, propagation for wireless communications, and polarimetric scattering for radar remote sensing. Development of both analytical and numerical methods for wave scattering analyses is major topic in his laboratory.

Research Fields of Interest

Scattering and diffraction

- Scattering by types of local guiding structures
- Multiple scattering between finite numbers of objects
- Approximate analysis using impedance boundary condition for electromagnetic scattering by local guiding structure

Propagation for wireless communications

- Propagation in buildings / on rough surfaces / in wetlands
- Development of ray-launching method with novel utilization of a binary tree for reflection/transmission rays
- Development of novel reflection/transmission coefficient including internal multiple reflections effect of finite thickness objects

Polarimetric Scattering analysis

- Scattering mechanism modeling for radar polarimetry
- FDTD polarimetric scattering analysis for complex objects

Education

1997: Doctoral Eng. Degree in Electronic Engineering, Chuo University, Japan
1994: Master Eng. Degree in Electronic Engineering, Chuo University, Japan
1992: Bachelor Eng. Degree in Electronic Engineering, Chuo University, Japan

Professional Societies and Activities

1. Member, The Institute of Electrical and Electronics Engineering (IEEE)
2. Member, The Institute of Electronics, Information and Communication Engineers (IEICE)
3. Member, The Institute Electrical Engineering of Japan (IEEJ)

Awards

1. 2008: Best Poster Award, 7th European Conference on Synthetic Aperture Radar (EUSAR 2008)
2. 2000: Paper Presentation Award, The Institute Electrical Engineering of Japan (IEEJ)
3. 1994:Young Scientist Award, 5th International Conference on Mathematical Method in Electromagnetic Theory (MMET*94)

Major Publications

[1] “Simplified Algorithm For Detecting Oriented Man-made Objects Using Correlation Coefficients in Circular Polarization Basis,” Electronic Proc. of the 2013 Asia-Pacific International Conference on Synthetic Aperture Radar (APSAR), Sept.2013.

[2] “Polarimetric Feature Evaluation For Stricken Man-Made Object Detection Using FDTD Polarimetric Scattering Analysis,” Electric Proc. of the 2013 IEEE International Geoscience and Remote Sensing Symposium (IGARSS 2013), July 2013.

[3] “Electromagnetic Plane Wave Diffraction By A Three-Layer Material Loaded Slit,” 2013 IEEE Antennas and Propagation Society International Symposium Digest, July 2013.

[4] “Stricken Man-Made Object Detection Using Scattering Power Decomposition With NNED and Rotation of the Covariance Matrix,” Electric Proc. of the 2012 IEEE International Geoscience and Remote Sensing Symposium (IGARSS 2012), July 2012.

[5] “Four-component Scattering Power Decomposition with Rotation of Coherency Matrix,” IEEE Trans. Geosci. Remote Sensing, vol.49, no.6, pp.2251-2258, June 2012.

[6] “Investigation of Polarimetric Scattering Characteristics For Accurate Classification of Oblique Wetland Boundary,” Electric Proc. of the 9th European Conference on Synthetic Aperture Radar (EUSAR 2012), pp. 251-254, May 2012.

[7] “Novel Usage of Binary Tree in SBR Algorithm for Efficient Indoor Propagation Analysis,” IEICE Electronics Express (ELEX), vol. 9, pp.673-678, April 2012.

[8] “High Frequency Ray-mode Coupling Analysis of Plane Wave Diffraction by a Wide and Thick Slit on a Conducting Screen,” IEICE Transactions on Electronics, vol. E95-C, no.1, pp.10-15, Jan. 2012.

[9] “Polarimetric Scattering Analysis for a Simplified Bridge Model on Water Surface,” Electric Proc. of 2011 International Symposium on Antennas and Propagation (ISAP2011), Oct. 2011.

[10] “FDTD Polarimetric Scattering Analysis for Detection of Stricken Man-made Object, Electric Proc. of 3rd Asia-Pacific International Conference on Synthetic Aperture Radar (APSAR2011), pp. 248-251, Oct. 2011.

[11] “Polarimetric Scattering Feature Estimation For Accurate Wetland Boundary Classification,” Electric Proc. of the 2011 IEEE International Geoscience and Remote Sensing Symposium (IGARSS 2011), pp. 130-133, July 2011.

[12] “Propagation Through A Window Frame Structure At Outdoor/indoor Interface Environment,” 2011 IEEE Antennas and Propagation Society International Symposium Digest, pp. 2379-2382, July 2011.

[13] “Modification of Ray-launching Method For Accurate 2D Indoor Propagation Analysis,” IEICE Transactions on Electronics, vol. E94-C, no. 1, pp.55-58, Jan. 2011.

[14] “Polarimetric Scattering Analysis for Accurate Observation of Stricken Man-made Targets Using a Rotated Coherency Matrix,” Electric Proc. of the 2010 IEEE International Geoscience and Remote Sensing Symposium (IGARSS 2010), pp. 746-749, July 2010.

[15] “Propagation Analysis for a Simplified Indoor/outdoor Interface Model,” 2010 IEEE Antennas and Propagation Society International Symposium Digest, pp.1-4, July 2010.

[16] Man-made Target Detection Using Modified Scattering Power Decomposition with a Polarimetric Rotation, Electric Proc. of the 8th European Conference on Synthetic Aperture Radar (EUSAR 2010), June 2010.

[17] “Analysis and Observation of Polarimetric Scattering Behavior in Wetland Area,” Electric Proc. of the 2009 IEEE International Geoscience and Remote Sensing Symposium (IGARSS 2009), vol.4, pp. 853-856, July 2009.

[18] “Polarimetric Scattering Feature Estimation for Accurate Vegetation Area Classification,” Electric Proc. of the 2009 IEEE International Geoscience and Remote Sensing Symposium (IGARSS 2009), vol.3, pp. 888-891, July 2009.

[19] “On Multiple Scattering Between Slits in an Infinite PEC Screen,” 2009 IEEE Antennas and Propagation Society International Symposium Digest, pp.1-4, July 2009.

[20] “Efficient Ray-Launching Method For 2D Indoor Propagation,”IEICE Transactions on Electronics, vol. E92-C, no. 1, pp.40-45, Jan. 2009.