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CONFERENCE PUBLICATIONS

2016

[C240] A. Epstein and G.V. Eleftheriades,"Low-profile single-feed highly-directive antennas based on cavity-excited metasurfaces", *IEEE Intl. Symposium on Antennas and Propagation* , 2 pages, Puerto Rico, June 26-July 1, 2016 (*invited*).

[C239] A. Epstein and G.V. Eleftheriades,"Reflectionless wide-angle beam splitter based on Omega-type bianisotropic metasurface", *IEEE Intl. Symposium on Antennas and Propagation* , 2 pages, Puerto Rico, June 26-July 1, 2016.

[C238] A.H. Dorrah, M. Memarian and G.V. Eleftheriades,"Modal analysis and closure of the bandgap in 2D transmission-line grids ", *IEEE Intl. Microwave Symposium* , 4 pages, San Francisco, May 22-27, 2016 (*3rd Prize Student Competition*).

[C237] G.V. Eleftheriades, "Transmission-line metamaterials and their relation to the transmission-line matrix method ", *IEEE Intl. Microwave Symposium* , 4 pages, San Francisco, May 22-27, 2016 (*invited*).

[C236] A.M.H. Wong and G.V. Eleftheriades, "Active Huygens' metasurfaces for RF waveform synthesis in a cavity", *18th Mediterranean Electrotechnical Conference-MELECON 2016* , Limassol, Cyprus (5 pages) April 2016.

[C235] T.R. Cameron and G.V. Eleftheriades, "Design considerations for slotted substrate integrated waveguide leaky-wave antennas", *10th European Conference on Antennas and Propagation, EuCap* , Davos, Switzerland, (4 pages) April 2016 .

[C234] G.V. Eleftheriades, "Huygens' metasurfaces with tailored properties and their applications", *10th European Conference on Antennas and Propagation, EuCap* , Davos, Switzerland, (invited on site) April 2016 .

[C233] A. Epstein. J.P.S. Wong and G.V. Eleftheriades, "Low-profile antennas with 100% aperture efficiency based on cavity-excited Omega-type bianisotropic metasurfaces", *10th European Conference on Antennas and Propagation, EuCap* , Davos, Switzerland, (4 pages) April 2016 .

2015

[C232] G.V. Eleftheriades, "Huygens' metasurfaces with tailored properties and their applications", *11th Loughborough Antennas and Propagation Conference, LAPC* , Loughborough, UK, Nov. 2-3, 2015 (*Keynote*).

[C231] A. Epstein. J.P.S. Wong and G.V. Eleftheriades, "Design and applications of Huygens' metasurfaces", *9th Intl. Congress on Advanced Materials in Microwaves and Optics-Metamaterials* , Oxford, UK, (pp. 67-69) Sept 2015 (*invited*).

[C230] T.R. Cameron and G.V. Eleftheriades, "A wide-angle scanning leaky-wave antenna loaded with a wideband metasurface", *IEEE Intl. Symposium on Antennas and Propagat and North America URSI Radio Science Meeting*, pp. 1096-1097 , Vancouver, July 2015.

[C229] A.M.H. Wong and G.V. Eleftheriades, "A simple active Huygens source for studying waveform synthesis via Huygens metasurfaces and antenna arrays", *IEEE Intl. Symposium on Antennas and Propagat and North America URSI Radio Science Meeting*, pp. 1092-1093 , Vancouver, July 2015.

[C228] M. Selvanayagam and G.V. Eleftheriades, "Modelling and measurement of cascaded tensor impedance surfaces for polarization control", *IEEE Intl. Symposium on Antennas and Propagat and North America URSI Radio Science Meeting*, (p. 134, URSI Abstract), Vancouver, July 2015.

[C227] A. Epstein and G.V. Eleftheriades, "Ray-oriented design of Huygens metasurfaces for multiple source exciations", *IEEE Intl. Symposium on Antennas and Propagat and North America URSI Radio Science Meeting* , (p. 135, URSI Abstract) Vancouver, July 2015.

[C226] A. Epstein and G.V. Eleftheriades, "Coupling localized sources to controlled polarized broadside radiation using Huygens metasurfaces", *IEEE Intl. Symposium on Antennas and Propagat and North America URSI Radio Science Meeting*, pp. 866-867 , Vancouver, July 2015.

[C225] M. Selvanayagam, G.V. Eleftheriades, "Chiral polarization control using cascaded tensor impedance surfaces", *IEEE Intl. Microwave Symposium*, (3 pages), Phoenix, AZ, May 2015.

[C224] G.V. Eleftheriades and M. Memarian, "The Dirac leaky-wave antenna", *Photonics North*, 1 page, Ottawa, June 2015 (*invited).*

[C223] A. Ludwig, J. Wong, A. Epstein, C.D. Sarris, and G.V. Eleftheriades, "Focusing and steering for medical applications with magnetic near-field arrays and metasurfaces", *Proc. of the The 9th European Conference on Antennas and Propagation (EuCAP 2015)*, Lisbon, Portugal, April 2015 (*invited).*

[C222] G.V. Eleftheriades, "Metamaterials and Metasurfaces: Fundamentals and Applications", *5th Metamaterial Symposium*, Tokyo, Japan, March. 2015 (*plenary).*

2014

[C221] M. Selvanayagam and G.V. Eleftheriades, "Implementing tensor Huygens surfaces", *Metamaterials*, Copenhagen, Denmark, pp. 262-264, Aug. 2014.

[C220] M. Memarian and G.V. Eleftheriades, "All dielectric steerable leaky-wave THz Antenna", *IEEE Intl. Symposium on Antennas and Propagation/APSURSI*, pp. 314, Memphis TN, July 2014.

[C219] A. Ludwig, C.D. Sarris and G.V. Eleftheriades, "Formation and steering of subwavelength magnetic-field beams using near-field antenna arrays", *IEEE Intl. Symposium on Antennas and Propagation/APSURSI*, Memphis TN, July 2014.

[C218] M. Chan and G.V. Eleftheriades, "Manipulating antenna radiation patterns with angle holography", *IEEE Intl. Symposium on Antennas and Propagation/APSURSI*, pp. 1744-1745, Memphis TN, July 2014.

[C217] M. Selvanayagam and G.V. Eleftheriades, "Tensor Huygens surfaces", *IEEE Intl. Symposium on Antennas and Propagation/APSURSI*, pp. 17-18, Memphis TN, July 2014 **(student paper contest finalist)** .

[C216] T.R. Cameron, S.V. Hum and G.V. Eleftheriades, "A wide-angle impedance matching metasurface", *IEEE Intl. Symposium on Antennas and Propagation/APSURSI*, pp. 21-22, Memphis TN, July 2014 .

[C215] L. Markley and G.V. Eleftheriades, "A metamaterial transition layer for free-space radiation from a slotline leaky-wave antenna", *IEEE Intl. Symposium on Antennas and Propagation/APSURSI*, pp. 759-760, Memphis TN, July 2014 .

[C214] G.V. Eleftheriades, "Some perspectives on modes guided by negative-permittivity slabs", *IEEE Intl. Microwave Symposium*, Tampa, FL, 4-pages, June 2014 **(invited)**.

[C213] J. Wong, M. Selvanayagam, and G.V. Eleftheriades, "A thin printed metasurface for microwave refraction", *IEEE Intl. Microwave Symposium*, Tampa, FL, 4-pages, June 2014 **(Student Competition Finalist)**.

[C212] A. Wong and G.V. Eleftheriades, "Superdirectivity-inspired superoscillatory waveform design: A practical path to far-field sub-diffraction imaging", *European Conference on Antennas and Propagation, EuCAP*, The Hague, The Netherlands, 5 pages, April 6-11, 2014.

[C211] H. Mirzaei and G.V. Eleftheriades, "Realizing non-Foster reactances using negative-group-delay networks and applications to antennas", *IEEE Radio and Wireless Symposium*, Newport Beach, CA, 3 pages, Jan. 19-22, 2014 (**invited**).

2013

[C210] M. Selvanayagam and G.V. Eleftheriades, "A surface cloak using active Huygens surfaces", *Metamaterials: The 7th Intl. Congress on Advanced Electromagnetic Materials in Microwaves and Optics, Metamaterials 2013*, Bordeaux, France, 4 pages, Sept. 16-21, 2013 **(invited)**.

[C209] G.V. Eleftheriades, "Metamaterials: Challenges and Opportunities", *Metamaterials: The 7th Intl. Congress on Advanced Electromagnetic Materials in Microwaves and Optics, Metamaterials 2013*, Bordeaux, France, Sept. 16-21, 2013 **(invited keynote)**.

[C208] R. Amineh and G.V. Eleftheriades, "Imaging beyond the diffraction limit by employing a super-oscillating filter", *IEEE Intl. Symposium on Antennas and Propagation/APSURSI*, Orlando, FL, July 7-13, 2013.

[C207] M. Selvanayagam and G.V. Eleftheriades, "An active surface cloak based on the equivalence principle", *IEEE Intl. Symposium on Antennas and Propagation/APS-URSI*, Orlando, FL, July 7-13, 2013. (**invited**).

[C206] M. Memarian and G.V. Eleftheriades, "Radiation of dipoles at the interface of anisotropic low-permittivity media ", *IEEE Intl. Symposium on Antennas and Propagation/APS-URSI*, Orlando, FL, July 7-13, 2013.

[C205] G. Milford and G.V. Eleftheriades, "2D multiplier with left-handed focusing lens for Terahertz signal generation ", *IEEE Intl. Symposium on Antennas and Propagation/APS-URSI*, Orlando, FL, July 7-13, 2013.

[C204] H. Mirzaei and G.V. Eleftheriades, "Squint-free beamforming in series-fed antenna arrays using synthesized non-Foster elements ", *IEEE Intl. Symposium on Antennas and Propagation/APS-URSI*, Orlando, FL, July 7-13, 2013 (**Student Competition Finalist**).

[C203] N. Sood, Y. He and G.V. Eleftheriades, "Experimental validation of ray-tracing based assessment of MIMO performance", *IEEE Intl. Symposium on Antennas and Propagation/APS-URSI*, Orlando, FL, July 7-13, 2013.

[C202] L. Markley and G.V. Eleftheriades, "A transient analysis of negative refraction at the interface between two transmission-line grids", *IEEE Intl. Microwave Symposium*, Seattle, WA, June 2-7, 2013.

[C201] A.C Papanastasiou, E.G. Gheorhiou and G.V. Eleftheriades, "A quad-band rat race coupler based on the generalized negative-refractive-index transmission-line metamaterial concept", *Proceedings of the 43rd European Microwave Conference*, pp. 302-305, Nuremburg, Germany, Oct. 7-10, 2013 .

[C200] H. Mirzaei and G.V. Eleftheriades, "Unilateral non-Foster elements using loss-compensated negative-group-delay networks for guided-wave applications", *IEEE Intl. Microwave Symposium*, Seattle, WA, June 2-7, 2013 **Student Competition Finalist**.

2012

[C199] M. Selvanayagam and G.V. Eleftheriades, "New transmission-line unit cells for buidling transformation electromagnetics devices", *Metamaterials: The Sixth Intl. Congress on Advanced Electromagnetic Materials in Microwaves and Optics*, St. Peterburg, Russia, Sept. 17-22, 2012 **(invited)**.

[C198] M.A. Antoniades and G.V. Eleftheriades, "Negative-Refractive-Index Transmission-Line Metamaterial-Loaded dipole antennas," *Proc. 2012 IEEE-APS Topical Conference on Antennas and Propagation in Wireless Communications (APWC '12)*, Cape Town, South Africa, pp.174 - 177,Sept. 2-7, 2012. **(invited**)

[C197] H. Mirzaei and G.V. Eleftheriades, "Exponentially-decaying travelling-wave resonators by coupled postive-index/negative-index guides ", *IEEE Intl. Symposium on Antennas and Propagation/APSURSI*, Chicago, IL, 2 pages, July 8-21, 2012 **(student-paper competition finalist)**.

[C196] G.V. Eleftheriades, "Wheeler's insightful approach to small antennas", *IEEE Intl. Symposium on Antennas and Propagation/APSURSI*, Chicago, IL, 2 pages, July 8-21, 2012 **(invited)**.

[C195] M. Selvanayagam and G.V. Eleftheriades, "Dual-polarized negative refraction in a volumetric transmission-line metamaterial", *IEEE Intl. Symposium on Antennas and Propagation/APSURSI*, Chicago, IL, 2 pages, July 8-21, 2012.

[C194] Y. He and G.V. Eleftheriades, "Metamaterial-inspired wideband circular monopole antenna", *IEEE Intl. Symposium on Antennas and Propagation/APSURSI*, Chicago, IL, 2 pages, July 8-21, 2012.

[C193] M. Selvanayagam and G.V. Eleftheriades, "A dual-polarized transmission-line metamaterial unit cell", *IEEE Intl. Microwave Symposium*, Montreal, Canada, 3 pages, June 17-22, 2012.

[C192] C.G.M. Ryan and G.V. Eleftheriades, "A single-ended all-pass generalized negative-refractive-index transmission line using a bridged-T circuit", *IEEE Intl. Microwave Symposium*, Montreal, Canada, 3 pages, June 17-22, 2012.

[C191] M. Memarian and G.V. Eleftheriades, "Spectral-impulse-response approach for analyzing the aperiodic excitation of a periodic diffraction grating ", *IEEE Intl. Microwave Symposium*, Montreal, Canada, 3 pages, June 17-22, 2012.

[C190] Y. Wang, A.S. Helmy and G.V. Eleftheriades,"Plasmonic antenna-array for 2D sub-diffraction focsusing beyond the optical near field ", *Lasers and Electro-Optics (CLEO)*, 2 pages, San Jose, CA, May 6-11, 2012.

[C189] G.V. Eleftheriades, L. Markley, and A.M.H. Wong, "Sub-wavelength focusing and imaging using shifted beam and super-oscillation antenna arrays", *Antenna Technology and Applied Electromagnetics (ANTEM)*, Toulouse, France, 6 pages, May 2012 **(plenary)**.

[C188] G.V. Eleftheriades, "Sub-diffraction focusing and imaging using shifted-beam and super-oscillation structures", *Intl. Conference on Computational and Experimental Engineering and Science*, Crete, Greece, April 30-May 4 2012 **(invited theme talk)**.

[C187] Y. Wang, A.S. Helmy and G.V. Eleftheriades, "Plasmonic antenna-array for 2D sub-diffraction focusing beyond the optical near-field", *CLEO (Lasers and Electro-optics*, May 6-11, 2 pages, San Jose, CA, 2012.

[C186] C. Ryan and G.V. Eleftheriades, "A wideband metamaterial meander-line antenna", *6th European Conference on Antennas and Propagation, EuCap 2012*, Prague, 26-30 March 2012 **(student paper contest finalist)**.

[C185] H. Mirzaei and G.V. Eleftheriades, "Antenna applications of non-Foster elements", *Intl. Workshop on Antenna Technology (iWAT)*, pp. 281-284, Tuscon, AZ, March 2012 **(invited)**.

2011

[C184] H. Mirzaei and G.V. Eleftheriades, "Squint-free leaky-wave radiation with non-Foster artificial transmission lines, *Metamaterials*, Barcelona, Spain, Oct. 2011**(best student-paper contest finalist)**.

[C183] H. Mirzaei and G.V. Eleftheriades, "An active artificial transmission line for squint-free series-fed antenna array applications", *European Microwave Conference*, Manchester, UK, pp. 503-506, Oct. 9-14, 2011.

[C182] M. Selvanayagam and G.V. Eleftheriades, "A sheared transmission-line metamaterial unit cell with a full material tensor", *IEEE Intl. Symposium on Antennas and Propagation and USNC/URSI National Radio Science Meeting*, pp. 2872-2875, Spokane, WA, July 3-8, 2011.

[C181] H. Mirzaei and G.V. Eleftheriades, "A Wideband metamaterial-inspired compact antenna using embedded non-Foster matching", *IEEE Intl. Symposium on Antennas and Propagation and USNC/URSI National Radio Science Meeting*, pp. 1950-1953, Spokane, WA, July 3-8, 2011 **(invited; honorable mention; student paper contest)**.

[C180] M. Antoniades and G.V. Eleftheriades, "A multi-band NRI-TL metamaterial-loaded bow-tie antenna", *IEEE Intl. Symposium on Antennas and Propagation and USNC/URSI National Radio Science Meeting*, pp. 665-668, Spokane, WA, July 3-8, 2011 **(invited)**.

[C179] S. Raza, M. Antoniades and G.V. Eleftheriades, "A Compact low-profile high-impedance surface for use as an antenna ground plane", *IEEE Intl. Symposium on Antennas and Propagation and USNC/URSI National Radio Science Meeting*, pp. 1832-1835, Spokane, WA, July 3-8, 2011.

[C178] A. Ludwig, G.V. Eleftheriades, C.D. Sarris, "FDTD analysis of meta-screens for sub-wavelength focusing", *IEEE Intl. Symposium on Antennas and Propagation and USNC/URSI National Radio Science Meeting*, pp. 673-676, Spokane, WA, July 3-8, 2011 **(invited)**.

[C177] M. Memarian and G.V. Eleftheriades, "Analysis of near field scattering on MIMO antennas", *IEEE Intl. Symposium on Antennas and Propagation and USNC/URSI National Radio Science Meeting*, Spokane, WA, July 3-8, 2011 (abstract).

[C176] G.V. Eleftheriades, "Metamaterials for optical and microwave applications", *2011 CMOS Emerging Technologies Conference*, Whistler, BC, June 15-17, 2011 **(invited)**.

[C175] L. Markley and G.V. Eleftheriades, "Detecting buried objects with subwavelength resolution using a near-field array probe", *IEEE Intl. Microwave Symposium*, Baltimore, MD, June 5-10, 2011.

[C174] C. Ryan and G.V. Eleftheriades, "A printed dual-band coupled-line coupler using modified generalized negative-refractive-index transmission lines", *IEEE Intl. Microwave Symposium*, Baltimore, MD, June 5-10, 2011.

[C173] M. Selvanayagam and G.V. Eleftheriades, "A rotated transmission-line metamaterial unit cell for transformation-optics applications", *IEEE Intl. Microwave Symposium*, Baltimore, MD, pp. 1-4, June 5-10, 2011.

[C172] G.V. Eleftheriades, "Sub-wavelength focusing and imaging using shifted-beam and superoscillation structures", *IEEE Intl. Microwave Symposium*, Workshop on Recent Developments in Microwave Imaging and Detection, Baltimore, MD, June 5-10, 2011 **(invited)**.

[C171] Y. Wang, A.S. Helmy and G.V. Eleftheriades, "Ultra-wideband optical leaky-wave slot antennas", *The 5th Intl. Conference on Surface Plasmon Photonics*, Busan, Korea, May 15-20, 2011.

[C170] M.A. Antoniades and G.V. Eleftheriades, "A NRI-TL Metamaterial-loaded bow-tie antenna", *5th European Conference on Antennas and Propagation (EuCap)*, Rome, Italy, pp. 2406-2409, April 11-15, 2011.

2010

[C169] L. Markley, G.V. Eleftheriades, "Experimental verification of two-dimensional subwavelength-focused sub-wavelength resolution using a near-field probe", *European Microwave Conference*, Paris, France, Sept. 26-Oct. 1, 2010 (4 pages).

[C168] M. Zedler, G.V. Eleftheriades, "Hybridisation of 2D frequency-domain TLM with the MoM-discretized 2D-EFIE", *European Microwave Conference*, Paris, France, Sept. 26-Oct. 1, 2010 (4 pages).

[C167] L. Markley, G V. Eleftheriades, "Experimental verification of two-dimensional subwavelength-focused imaging using a near-field probe", *Metamaterials*, Karlsruhe, Germany, September, 2010 **(invited; best student-paper award)**.

[C166] J. Zhu, G.V. Eleftheriades, "Reducing the mutual coupling in arrays of closely-spaced MTM-inspired antennas", *Metamaterials*, Karlsruhe, Germany, September, 2010 **(invited)**.

[C165] L. Markley, G.V. Eleftheriades, "A design procedure for generalized negative-refractive-index transmission-lines in dual/quad-band applications", *Metamaterials*, Karlsruhe, Germany, September, 2010 **(invited)**.

[C164] A.M.H. Wong and G.V. Eleftheriades, "Superoscillatory antenna arrays for sub-diffraction focusing at the multi-wavelength range in a waveguide environment", *IEEE Intl. Symposium on Antennas and Propagation and CNC/USNC/URSI Radio Science Meeting*, Toronto, ON, Canada, July 11-17, 2010 **(Student Paper Competition Finalist**).

[C163] M. A. Y. Abdalla, K. Phang, G.V. Eleftheriades, "A Metamaterial-based passive MMIC tunable phase shifter", *IEEE Intl. Symposium on Antennas and Propagation and CNC/USNC/URSI Radio Science Meeting*, Toronto, ON, Canada, July 11-17, 2010 (URSI abstract).

[C162] M. Selvanayagam, D. Choudhury, G.V. Eleftheriades, "A dual band Wi-Fi antenna using a Metamaterial CSRR matching particle", *IEEE Intl. Symposium on Antennas and Propagation and CNC/USNC/URSI Radio Science Meeting*, Toronto, ON, Canada, July 11-17, 2010.

[C161] M. Antoniades and G.V. Eleftheriades, "A miniaturized multiband monopole antenna using a double-tuned Wheeler matching network", *IEEE Intl. Symposium on Antennas and Propagation and CNC/USNC/URSI Radio Science Meeting*, Toronto, ON, Canada, July 11-17, 2010.

[C160] M. Zedler and G.V. Eleftheriades, "Hybridization of 2D frequency domain TLM with 2D method of moments", *IEEE Intl. Symposium on Antennas and Propagation and CNC/USNC/URSI Radio Science Meeting*, Toronto, ON, Canada, July 11-17, 2010 (URSI abstract).

[C159] A. Zaghloul, G.V. Eleftheriades, and R. Mittra, "A Tribute to Canadian contributions to electromagnetics, antennas, and propagation", *IEEE Intl. Symposium on Antennas and Propagation and CNC/USNC/URSI Radio Science Meeting*, Toronto, ON, Canada, July 11-17, 2010 (URSI abstract).

[C158] L. Markley and G.V. Eleftheriades, "Experimental verification of a two-dimensional near-field subwavelength-focusing imaging probe", *IEEE Intl. Symposium on Antennas and Propagation and CNC/USNC/URSI Radio Science Meeting*, Toronto, ON, Canada, July 11-17, 2010 (URSI abstract).

[C157] J. Zhu and G.V. Eleftheriades, "A simple approach to reducing mutual coupling in two closely-spaced electrically small antennas", *IEEE Intl. Symposium on Antennas and Propagation and CNC/USNC/URSI Radio Science Meeting*, Toronto, ON, Canada, July 11-17, 2010 **(Student Competition Finalist)**.

[C156] C. G. M. Ryan and G. V. Eleftheriades, "A Dual-band leaky-wave antenna based on generalized Negative-Refractive-Index Transmission-Lines", *IEEE Intl. Symposium on Antennas and Propagation and CNC/USNC/URSI Radio Science Meeting*, Toronto, ON, Canada, July 11-17, 2010 **(invited)**.

[C155] G.V. Eleftheriades, "Fundamental and applications of transmission line metamaterials", *CIMTEC 2010 - 12th International Conference on Modern Materials and Technologies*, Montecatini Terme, Tuscany, Italy, June 6-18, 2010 **(invited)**.

[C154] H. Mirzaei and G.V. Eleftheriades, "Negative and zero group velocity in microstrip/negative-refractive-index transmission-line couplers", *IEEE Intl. Microwave Symposium*, Anaheim, CA, pp. 37-40, May 23-28, 2010.

[C153] M. Zedler and G.V. Eleftheriades, "2D Transformation optics using anisotropic transmission-line metamaterials", *IEEE Intl. Microwave Symposium*, Anaheim, CA, pp. 33-36,May 23-28, 2010.

[C152] G.V. Eleftheriades, "The Transmission-Line Paradigm for Metamaterials: Fundamentals & Selected Applications", *IEEE Intl. Microwave Symposium*, Workshop on Practical Metamaterial RF and Antennas for Commercial Application, Anaheim, CA, May 23-28, 2010 **invited**.

[C151] G.V. Eleftheriades, R. Islam, M. Zedler, "The transmission-line paradigm for metamaterials: Fundamentals and applications", *EuCAP 2010: The 4th European Conference on Antennas and Propagation*, Barcelona, Spain, April 12-16, 2010 **(keynote)**.

[C150] G.V. Eleftheriades, M.A. Antoniades, J. Zhu and M. Selvanayagam, "Compact, wideband and multiband antennas based on metamaterial concepts", *EuCAP 2010: The 4th European Conference on Antennas and Propagation*, Barcelona, Spain, April 12-16, 2010 **(invited)**.

[C149] M. Antoniades and G.V. Eleftheriades, "A multiband monopole antenna using a double-tuned Wheeler matching network," *EuCAP 2010: The 4th European Conference on Antennas and Propagation*, Barcelona, Spain, April 12-16, 2010.

[C148] G.V. Eleftheriades, "The transmission-line paradigm for metamaterials: Fundamentals and selected applications", Workshop on Metamaterials: Applications, Analysis and Modeling. *Inst. of Pure and Applied Mathematics*, UCLA, Los Angeles, CA, Jan. 25-29, 2010 **(invited)**.

2009

[C147] G.V. Eleftheriades, "Transmission-line metamaterials: Theory and Applications", *The Third IEEE Intl. Symposium on Microwave, Antenna, Propagation and EMC Technologies for Wireless Communications*, Beijing, China, (4-pages), Oct. 27-29, 2009 **(keynote)**.

[C146] G.V. Eleftheriades, "Recent advances in transmission-line metamaterials and applications", Workshop on Recent Advances on Microwave Applications of Metamaterial Concepts, *39th European Microwave Conference*, Rome, Italy, Sept. 29-Oct 01, 2009 **(invited)**.

[C145] M. Zedler and G.V. Eleftheriades, "Spatial harmonics and homogenization of NRI-TL metamaterial structures", *Proc. of the 39th European Microwave Conference*, Rome, Italy, pp. 504-507, Sept. 29-Oct. 01, 2009.

[C144] L. Markley and G.V. Eleftherides, "A near-field probe for subwavelength-focused imaging", *IEEE AP-S/URSI National Radio-Science Meeting*, Charleston, SC, June 2009 (1-page abstract).

[C143] M. Selvanayagam and G.V. Eleftheriades, "Metamaterial based Wi-Fi antenna using electric field coupled resonators", *IEEE Intl. Symposium on Antennas and Propagation*, Charleston, SC, 4-pages, June 2009 **(honorable mention in student paper contest)**.

[C142] J. Zhu, M.A. Antoniades and G.V. Eleftheriades,"A tri-band compact metamaterial-loaded monopole antenna for WiFi and WiMAX applications", *IEEE Intl. Symposium on Antennas and Propagation, Charleston*, SC, 4-pages, June 2009 **(honorable mention in student paper contest)**.

[C141] M. Zedler, G.V. Eleftheriades and P. Russer, "Three-dimensional isotropic scalar metamaterials with Drude dispersion for the permittivity and permeability", *IEEE Intl. Microwave Symposium*, Boston, MA, pp. 149-152,June 2009.

[C140] L. Markley and G.V. Eleftheriades, "A near-field probe for subwavelength-focused imaging", *IEEE Intl. Microwave Symposium*, Boston, MA, pp. 281-284, June 2009.

[C139] G.V. Eleftheriades, "Fundamentals of Transmission-line Metamaterials & Applications", *Army Antenna Workshop on Metamaterials*, Baltimore, USA, May 28-29, 2009 **(invited)**.

[C138] G.V. Eleftheriades, "Negative-Refraction Metamaterials and Their Applications", *3rd European Conference on Antennas and Propagation*, Berlin, Germany, March 23-27, 2009 **(invited IEEE Distinguished Lecture)**.

[C137] M.A. Antoniades and G.V. Eleftheriades, "A compact and broadband NRI-TL metamaterial monopole antenna", *2009 International Symposium on Antenna Technology and Applied Electromagnetics (ANTEM) and the Canadian Radio Sciences Meeting (URSI/CNC)*, Banff, AB, Canada, 4 pages, Feb. 2009.

[C136] A. K. Iyer and G. V. Eleftheriades, "Effective-medium properties of a free-space transmission-line metamaterial superlens", *2009 International Symposium on Antenna Technology and Applied Electromagnetics (ANTEM) and the Canadian Radio Sciences Meeting (URSI/CNC)*, Banff, AB, Canada, 4-pages, Feb. 2009. **(student paper award)**.

2008

[C135] G.V. Eleftheriades, "Negative-Refraction Metamaterials and Their Applications,"]it IEEE CLASTech Symposium and Exhibition, Los Angeles, Oct. 17, 2008 **(invited)**.

[C134] G.V. Eleftheriades, "New Frontier in Electromagnetics: Transmission-Line Metamaterials", *Korea Electromagnetic Engineering Society (KEES) Workshop on Microwave & Millimeter Waves*, Seoul, Korea, Oct. 09, 2008 **(keynote)**.

[C133] G.V. Eleftheriades, A.K. Iyer and L. Markley, "Transmission-line metamaterial lenses and metascreens for free-space superlensing", *2nd Intl. Congress on Advanced Electromagnetic Materials in Microwave and Optics*, Pamplona, Spain, Sept. 21-26, 2008 **(keynote)**.

[C132] A. Deleniv, J. Wong, V. Drakinski, and G.V. Eleftheriades, "Beam steering in a planar anisotropic transmission-line metamaterial using ferroelectric varactors", *2nd Intl. Congress on Advanced Electromagnetic Materials in Microwave and Optics*, Pamplona, Spain, Sept. 21-26, 2008 **(invited)**.

[C131] G.V. Eleftheriades, "Negative-refractive-index transmission-line metamaterials: fundamentals and applications", *XXIX URSI Radio Science General Assembly*, Chicago, August 7-16, 2008 **(invited tutorial)**.

[C130] Y. Wang, A.M.H. Wong, A.S. Helmy, and G.V. Eleftheriades, "Plasmonic nano-slot antennas for optical sub-wavelength focusing, *XXIX URSI Radio Science General Assembly*, Chicago, August 7-16, 2008 **(invited)**.

[C129] M.A. Antoniades and G.V. Eleftheriades, "A compact monopole antenna with a defected ground plane for multiband applications", *IEEE Intl. Antennas and Propagation Symposium and USNC/URSI Radio Science Meeting*, San Diego, CA, 4-pages , July 5-12, 2008.

[C128] A.K. Iyer and G.V. Eleftheriades, "Free-space sub-diffraction imaging using a transmission-line superlens", *IEEE Intl. Antennas and Propagation Symposium and USNC/URSI Radio Science Meeting*, San Diego, CA, 4-pages, July 5-12, 2008 **(invited/honorable mention in student paper contest)**.

[C127] M.A. Antoniades and G.V. Eleftheriades, "Efficiency measurement of electrically small negative-refractive-index transmission-line (NRI-TL) antennas", *IEEE Intl. Antennas and Propagation Symposium and USNC/URSI Radio Science Meeting*, San Diego, abstract, CA, July 5-12, 2008 **(invited)**.

[C126] A. Wong and G.V. Eleftheriades, "Experimental verification of sub-wavelength focusing via a holographic metallic screen", *IEEE Intl. Antennas and Propagation Symposium and USNC/URSI Radio Science Meeting*, San Diego, CA, 4-pages, July 5-12, 2008 **(invited/honorable mention in student paper contest)**.

[C125] L. Markley and G.V. Eleftheriades,"Near-field sub-wavelength focusing through a two-dimensional meta-screen", *IEEE Intl. Antennas and Propagation Symposium and USNC/URSI Radio Science Meeting*, San Diego, CA, July 5-12, 2008 (1-page abstract).

[C124] J. Zhu and G.V. Eleftheriades, "Fully printed volumetric negative-refractive-index transmission-line slabs using a stacked shunt-node topology", *IEEE Intl. Microwave Symposium*, Atlanta , pp. 173-176, June 15-20, 2008.

[C123] F. Elek and G.V. Eleftheriades, "On the slow wave behaviour of the shielded mushroom structure", *IEEE Intl. Microwave Symposium*, Atlanta , pp. 1333-1336, June 15-20, 2008.

[C122] R. Islam and G.V. Eleftheriades, "A Compact highly-selective filter inspired by negative-refractive-index transmission lines", *IEEE Intl. Microwave Symposium*, Atlanta , pp. 895-898, June 15-20, 2008.

[C121] A. Grbic and G.V. Eleftheriades, "3D Metamaterials: Experiments and Analysis", WMJ Workshop in 3D Metamaterials: Theory, Structures and Devices, *IEEE Intl. Microwave Symposium*, Atlanta , June 15-20, 2008 **(invited)**.

[C120] G.V. Eleftheriades, "Negative-Refractive-Index Transmission-Line (NRI-TL) metamaterials and their applications", *IEEE Canada 21st Canadian Conference on Electrical and Computer Engineering*, Niagara Falls, May 4-7, 2008 **(plenary)**.

[C119] G.V. Eleftheriades, "Negative-Refraction Transmission-Line metamaterials and their applications", *Applied Computational Electromagnetic Symposium, ACES*, Niagara Falls, March 40-April 4, 2008 **(plenary)**.

[C118] J. Zhu and G.V. Eleftheriades, "Overcoming the diffraction limit with a volumetric Negative-Refractive-Index Transmission-Line slab", *Progress in Electromagnetics Research Symposium*, Hangzhou, China, pp. 953, March 24-28, 2008 **(invited)**.

[C117] G.V. Eleftheriades, "Free-space superlensing with transmission-line and related metamaterial structures", *Intl. Conference on Computational & Experimental Engineering and Sciences (ICCES)*, Honolulu, HI, March 16-18, 2008 **(invited)**.

[C116] M.A.Y. Abdalla, K. Phang, and G.V. Eleftheriades, "A steerable series-fed phased array architecture using tunable PRI/NRI phase shifters", *Intl. Workshop on Antenna Technology (iWAT)*, March 4-6, Chiba University, Japan, March 4-6, 2008 **(invited)**.

2007

[C115] G.V. Eleftheriades, "Microwave metamaterials and applications: Current status of the experimental and theoretical developments", *Metamaterials, First Intl. Congress on Advanced Electromagnetic Materials in Microwaves and Optics*, Rome Italy, Oct. 22-27, 2007 **(plenary)**.

[C114] M. Studniberg and G.V. Eleftheriades, "Physical implementation of a generalized NRI-TL medium for quad-band applications", *37th European Microwave Conference*, Munich, Germany, pp. 408-411, 8-12, October 2007 **(invited)**.

[C113] Y. Wang, A. Helmy and G.V. Eleftheriades, "Surface plasmon-polariton based ultra-short contra-directional coupler at optical frequencies", *SPIE Photonic Metamaterials*, San Diego, CA, August 26-30, 2007 **(invited)**.

[C112] G.V. Eleftheriades, "Negative-Refractive-Index Transmission-Line (NRI-TL) Metamaterials: Fundamentals & Applications", *EMTS 2007, Intl. Symposium on Electromagnetic Theory URSI-Commision B*, Ottawa, July 26-28, 2007 **(plenary)**.

[C111] A.K. Iyer and G.V. Eleftheriades, "Negative-Refractive-Index Transmission-Line lenses for free-space focusing", *EMTS 2007, Intl. Symposium on Electromagnetic Theory URSI-Commission B*, Ottawa, July 26-28, 2007.

[C110] M. Antoniades and G.V. Eleftheriades, "Miniaturization techniques for planar antennas and their feed networks using Negative-Refractive-Index Transmission-Line (NRI-TL) metamaterials", *URSI 2007 North American Radio Science Meeting*, Ottawa, July 22-26, 2007 **(invited)**.

[C109] M. Studniberg and G.V. Eleftheriades, "A quad-band bandpass filter using negative-refractive-index transmission-line (NRI-TL) metamaterials", *IEEE Intl. Symposium on Antennas and Propagation (AP-S), Honolulu, Hawaii*, pp. 4961 4964, June 10-14, 2007.

[C108] R. Islam and G.V. Eleftheriades, "Compact negative-refractive-index transmission-line (NRI-TL) coupler, filter and diplexer", *IEEE Intl. Symposium on Antennas and Propagation (AP-S)*, Honolulu, Hawaii, pp. 4957 4960, June 10-14, 2007.

[C107] M.A. Antoniades and G.V. Eleftheriades, "A negative-refractive-index transmission-line (NRI-TL) leaky-wave antenna with reduced beam squinting", *IEEE Intl. Symposium on Antennas and Propagation (AP-S)*, Honolulu, Hawaii, pp. 5817-5820, June 10-14, 2007.

[C106] J. Zhu, M. Stickel, and G.V. Eleftheriades, "A broadband negative-refractive-index transmission-line (NRI-TL) stacked metamaterial for incident plane waves", *IEEE Intl. Symposium on Antennas and Propagation (AP-S)*, Honolulu, Hawaii, pp. 2357-2360, June 10-14, 2007.

[C105] M. Abdalla, K. Phang, and G.V. Eleftheriades, "A bi-directional tunable CMOS phase shifter using the high-pass topology", *IEEE Intl. Microwave Symposium (IMS)*, Honolulu, Hawaii, pp. 2173-2176, June, 3-8, 2007.

[C104] G.V. Eleftheriades and A.K. Iyer, "Recent advances in negative-refractive-index transmission-line metamaterials", Workshop on Recent advances in electromagnetic metamaterials, *IEEE Intl. Microwave Symposium (IMS)*, Honolulu, Hawaii, June, 3-8, 2007 **(invited)**.

[C103] S.P. Voinigescu,S.T. Nicolson, M. Khanpour, K.K.W. Tang, K.H.K. Yau, N. Seyedfathi, A Timonov, A. Nachman, P. Schvan, M.T. Yang, and G. Eleftheriades, "CMOS SOCs at 100 GHz: System architectures, device characterization, and IC design examples," *2007 IEEE International Symposium on Circuits and Systems (ISCAS)*, New Orleans, USA, May 27-30, 2007 **(invited)**.

[C102] G.V. Eleftheriades, "Enabling RF/Microwave devices and antennas using negative-refractive-index transmission-line (NRI-TL) metamaterials", *Loughborough Antennas & Propagation Conference*, Loughborough, UK, April 2-3, 2007 (6 IEEE Explore pages) **(keynote presentation)**.

2006

[C101] G.V. Eleftheriades and A.K. Iyer, "A volumetric negative-refractive-index transmission-line (NRI-TL) metamaterial for incident waves from free-space", *Materials Research Society (MRS), Symposium R*, Boston, Nov. 28-30, 2006. **(invited)**.

[C100] A.K. Iyer and G.V. Eleftheriades, "Characterization of a volumetric negative-refractive-index transmission-line (NRI-TL) metamaterial for incident waves from free space", *The first European Conference on Antennas and Propagation*, Nov. 6-10, Nice, France (7 pages), 2006 **(invited)**.

[C99] G.V. Eleftheriades, "Negative-Refraction Transmission-Line Matamaterials, Part I: Fundamentals, negative refraction and sub-diffraction imaging; Part II: Enabling Applications", *DPG Summer School on Metamaterials*, Bad Honnef, Germany, Sept. 17-22, 2006 **(invited)**.

[C98] G.V. Eleftheriades and M. Antoniades, "Negative-Refractive-Index Transmission-Line (NRI-TL) Metamaterials and Their Applications", Workshop on Metamaterials during the *Spanish XXI URSI National Meeting*, Oviedo, Spain, Sept. 12, 2006 **(invited)**.

[C97] O.F. Siddiqui and G.V. Eleftheriades, "Spatial-filering microwave devices using metallic anisotropic grids over ground", *Proc. of the European Microwave Conference*, Manchester, U.K., Sept. 10-15, 2006 **(invited)**.

[C96] M.A.Y. Abdalla and G.V. Eleftheriades, "A tunable metamaterial phase-shifter structure based on a 0.13 μm CMOS active inductor", *Proc. of the European Microwave Conference*, Manchester, U.K., Sept. 10-15, 2006.

[C95] G.V. Eleftheriades, M.A. Antoniades and F. Qureshi, "Some antenna applications of negative-refractive-index transmission-line (NRI-TL) metamaterials", *IEEE Intl. Symposium on Antennas and Propagation*, Albuquerque, NM, July 9-14, 2006. **(invited)**.

[C94] Y. Liu, C.D. Sarris and G.V. Eleftheriades, "Finite-difference time-domain simulation of plasmonic nanoparticles", *IEEE Intl. Symposium on Antennas and Propagation*, Albuquerque, NM, July 9-14, 2006.

[C93] Y. Wang and G.V. Eleftheriades, "Ultra-short coupler utilizing surface plasmon-polaritons at optical frequencies", *IEEE Intl. Symposium on Antennas and Propagation*, Albuquerque, NM, July 9-14, 2006.

[C92] L. Markley and G.V. Eleftheriades, "A polarization independent negative-refractive-index metamaterial for incident plane waves", *IEEE Intl. Symposium on Antennas and Propagation, Albuquerque*, NM, July 9-14, 2006.

[C91] M.A. Antoniades, and G.V. Eleftheriades, "A metamaterial series-fed linear dipole array with reduced beam squinting", *IEEE Intl. Symposium on Antennas and Propagation, Albuquerque*, NM, July 9-14, 2006 **(best student paper award)**.

[C90] A. Grbic and G.V. Eleftheriades, "Plasmonic metamaterials with a negative refractive index", *URSI Radio Science Meeting*", Albuquerque, NM, July 9-14, 2006.

[C89] A.K. Iyer and G.V. Eleftheriades, "Characterization of a multilayered negative-refractive-index transmission-line (NRI-TL) metamaterial", *IEEE Intl. Microwave Symposium (IMS)*, San Francisco, CA, June 11-16, 2006 **(second prize in student paper contest)**.

[C88] F. Elek and G.V. Eleftheriades, "Simple analytical dispersion equations for the shielded Sievenpiper structure", *IEEE Intl. Microwave Symposium (IMS)*, San Francisco, CA, June 11-16, 2006.

[C87] G.V. Eleftheriades, "Negative-refraction metamaterials and their applications", Workshop on Emerging Metamaterials, *Observatoire des Micro et Nano-Technologies*, Grenoble, France, May 30, 2006 **(invited)**.

[C86] M. Abdalla, K. Phang and G.V. Eleftheriades, "A differential active inductor for high-frequency phase shifters", *IEEE Intl. Symposium on Circuits and Systems (ISCAS)*, Kos, Greece, May 21-24, 2006.

[C85] G.V. Eleftheriades, M. Antoniades and F. Qureshi, "Selected antenna applications of negative-refractive-index transmission-line (NRI-TL) metamaterials", *The 13th Mediterranean Electrotechnical Conference (MELECON)*, Malaga, Spain, May 16-19, 4-pages, 2006 **(invited)**.

[C84] G.V. Eleftheriades, "Negative refraction and focusing using transmission-line metamaterials", *Materials Research Society (MRS Spring Meeting)*, San Francisco, CA, April 16-21, 2006 **(invited)**.

[C83] G.V. Eleftheriades, M. Antoniades and F. Qureshi, "Antenna applications of negative-refractive-index transmission-line metamaterials", *2006 IEEE Intl. Workshop on Antenna Technology (iWat): Small Antennas and Novel Metamaterials*, White Plains, NY, 4-pages, March 6-8, 2006 **(keynote presentation)**.

[C82] J. Wong, K.G. Balmain and G.V. Eleftheriades, "A diplexer based on the spatial filtering property of planar anisotropic transmission-line metamaterials", *2006 IEEE Intl. Workshop on Antenna Technology (iWat): Small Antennas and Novel Metamaterials*, White Plains, NY, 4-pages, March 6-8, 2006 **(best student paper award)**.

[C81] A.K. Iyer and G.V. Eleftheriades, "A volumetric negative-refractive-index metamaterial based on uniplanar transmission-line layers", *2006 URSI/USNC*, Boulder, CO, Jan. 2006 **(invited)**.

2005

[C80] G.V. Eleftheriades, A. Grbic and A.K. Iyer, "Focusing in Transmission-Line Negative-Refractive-Index Metamaterials", *The 89th Optical Society of America (OSA) Annual Meeting*, Tucson, AZ, Oct. 18-19, 2005 **(invited)**.

[C79] M.A. Antoniades, and G.V. Eleftheriades, "A broadband 1:4 series power divider using metamaterial phase-shifting lines", *Proc. of the 35th European Microwave Conference*, pp. 717-720, Paris, 4-6 Oct. 2005.

[C78] A.K. Iyer and G.V. Eleftheriades, "Negative-Refractive-index Transmission-Line Metamaterials and Applications", *Workshop on Metamaterials for Microwave and Optical Technologies*, San Sebastian, Spain, July 18-20, 2005 **(invited)**.

[C77] A. Grbic and G.V. Eleftheriades, "A 3-D Negative-Refractive-Index Transmission-Line Medium", *2005 IEEE Intl. Symposium on Antennas and Propagation*, vol. 2A, pp. 14-17, Washington DC, July 2005.

[C76] T. Kokkinos, C.D. Sarris, and G.V. Eleftheriades, "Finite-difference time-domain analysis of metamaterial-based leaky-wave antennas", 2005 *IEEE Intl. Symposium on Antennas and Propagation*, vol. 2A, pp. 26-29, Washington DC, July 2005.

[C75] T. Andrade, A. Grbic and G.V. Eleftheriades, "Growing evanescent waves in continuous micrstrip grids containing meandered lines", *2005 IEEE Intl. Symposium on Antennas and Propagation*, vol. 1A, pp. 39-42, Washington DC, July 2005 **(invited)**.

[C74] R. Islam and G.V. Eleftheriades, "Analysis of a finite length microstrip/NRI coupled-line coupler", *2005 IEEE Intl. Symposium on Antennas and Propagation*, vol. 1B, pp. 268-271, Washington DC, July 2005 **(invited)**.

[C73] M.A. Antoniades and G.V. Eleftheriades, "A broadband balun using metamaterial phase-shifting lines", *2005 IEEE Intl. Symposium on Antennas and Propagation*, Washington DC, July 2005 **(invited)**.

[C72] T. Kokkinos, C. D. Sarris, and G.V. Eleftheriades, "Efficient Finite-Difference Time-Domain (FDTD) modeling of periodic leaky-wave structures", *2005 IEEE Intl. Microwave Symposium*, Long Beach, CA, June 2005 (4 pages).

[C71] O.F. Siddiqui, K.G. Balmain and G.V. Eleftheriades, "Propagation of resonance cones in truncated hyperbolic transmission-line grids over ground", *2005 IEEE Intl. Microwave Symposium*, Long Beach, CA, June 2005 (4 pages) **(first prize in the student paper contest)**.

[C70] O. Siddiqui, T. Andrade, A. Grbic and G.V. Eleftheriades, "Negative refraction and focussing using continuous metallic grids over ground", *Proceedings of the URSI National Science Meeting*, pp. 34, Boulder, CO, Jan. 5-8, 2005.

[C69] A. Grbic and G.V. Eleftheriades, "Resolution bounds to imaging with negative-refractive-index transmission-line lenses", *Proceedings of the URSI National Science Meeting*, pp. 38, Boulder, CO, Jan. 5-8, 2005.

2004

[C68] G.V. Eleftheriades, "Negative-Refraction Transmission-Line Metamaterials and Enabling Electromagnetic Applications", *Proceedings of the 13th Journèes Intl. de Nice sur les Antennas (JINA)*, Nice, France, Nov. 8-10, 2004 (12 pages) **(invited)**.

[C67] M. Mojahedi, G.V. Eleftheriades, O. Siddiqui, and S. Erickson, "Dispersion engineering: using negative phase and group indices to compensate dispersive effects", *Bianisotropics 2004: 10th Conference on Complex Media and Metamaterials*, Amsterdam, Sept. 2004.

[C66] G.V. Eleftheriades, A. Grbic and A.K. Iyer, "Enabling electromagnetic applications of Negative-Refractive-Index Transmission-Line Metamaterials, Part I", *Intl. Symposium on Antenna Technology and Applied Electromagnetics (ANTEM)*, Ottawa, (5 pages), Aug. 2004.

[C65] G.V. Eleftheriades, M. Antoniades and R. Islam, "Enabling electromagnetic applications of Negative-Refractive-Index Transmission-Line Metamaterials, Part II", *Intl. Symposium on Antenna Technology and Applied Electromagnetics (ANTEM)*, Ottawa, (5 pages), Aug. 2004.

[C64] A.K. Iyer, and G.V. Eleftheriades, "Leaky-wave radiation from planar Negative-Refractive-Index Transmission-Line Metamaterials", *2004 IEEE Antennas and Propagation Society International Symposium*, Monterey, CA, USA, pp. 1411-1414, June 20-25, 2004 **(invited)**.

[C63] A.K. Iyer, K.G. Balmain, G.V. Eleftheriades, "Dispersion analysis of resonance cone behaviour in magnetically anisotropic Transmission-Line Metamaterials", *2004 IEEE Antennas and Propagation Society International Symposium*, Monterey, CA, USA, pp. 3147-3150, June 20-25, 2004 **(invited)**.

[C62] G.V. Eleftheriades, A. Grbic, M. Antoniades, "Negative-Refractive-Index Transmission-Line Metamaterials and Enabling Electromagnetic Applications", *2004 IEEE Antennas and Propagation Society International Symposium*, Monterey, CA, USA, pp. 1399-1402, June 20-25, 2004.

[C61] T. Kokkinos, R. Islam, C.D. Sarris, and G.V. Eleftheriades, "Rigorous analysis of negative-refractive-index metamaterials using FDTD with embedded lumped elements", *2004 IEEE Intl. Microwave Symposium*, San Antonio TX, June 2004.

[C60] R. Abhari and G.V. Eleftheriades, "Investigating the global suppression of the power/ground plane noise", *8th IEEE Workshop on Signal Propagation on Interconnects*, Hannover, Germany, May 2004.

[C59] A.K. Iyer and G.V. Eleftheriades, "Leaky-wave radiation from a two-dimensional Negative-Refractive-Index Transmission-Line Metamaterial", *2004 URSI International Symposium on Electromagnetic Theory*, vol. 2, pp. 891-893, Pisa, Italy, May 2004 **(invited)**.

[C58] G.V. Eleftheriades, M. Antoniades, A.K. Iyer, and R. Islam, "Antenna Applications of Negative-Refractive-Index Transmission-Line Materials", *27th ESA Antenna Technology Workshop on Innovative Periodic Antennas: Electromagnetic Bandgap, Left-handed Materials, Fractal and Frequency Selective Surfaces*, Santiago de Compostela, Spain, (10 pages), March 9-11, 2004 **(invited)**.

2003

[C57] G.V. Eleftheriades, "Negative-Refractive-Index Metamaterials Using Loaded Transmission Lines and Enabling RF Devises", *2003 Intl. Semiconductor Device Research Symposium (ISDRS)*, Washington DC, Dec. 10-13, 2003 **(invited)**.

[C56] G.V. Eleftheriades, A. Grbic, A.K. Iyer, M.A. Antoniades and R. Islam, "Enabling RF/microwave devices using negative-refractive-index metamaterials", *IEE Workshop on Metamaterials for Microwave and (Sub) millimetre-Wave Applications*, London, U.K., Nov. 2003.

[C55] A. Grbic and G.V. Eleftheriades, "Surpassing the diffraction limit with a planar left-handed transmission-line lens", *Progress In Electromagnetic Research Symposium (PIERS)*, Hawaii, Oct. 2003 (focused session on metamaterials).

[C54] A.K. Iyer and G.V. Eleftheriades, "Theoretical and experimental characterization of focusing in periodically loaded transmission-line negative refractive index metamaterials", *URSI National Radio Science Meeting*, Columbus, Ohio, pp. 528, June 22-27, 2003 **(invited)**.

[C53] A. Grbic and G.V. Eleftheriades, "Sub-wavelength focusing and Dispersion characteristics of Negative-Refractive-Index Transmission Line media", *URSI National Radio Science Meeting, Columbus*, Ohio, June 22-27, 2003. **(invited)**.

[C52] F. Elek, R. Abhari, and G.V. Eleftheriades, "A Uni-directional ring-slot antenna achieved by using an electromagnetic band-gap surface", *URSI National Radio Science Meeting*, Columbus, Ohio, June 22-27, 2003 **(invited)**.

[C51] M. Antoniades and G.V. Eleftheriades, "Compact, linear, lead/lag phase shifters using negative refractive index metamaterials", *IEEE Antennas and Propagation Intl. Symposium /URSI National Radio Science Meeting*, vol. 3, Columbus, Ohio, pp. 367-370, June 22-27, 2003 **(invited)**.

[C50] K.G. Balmain, A. Luettgen and G.V. Eleftheriades, "Resonance cone radiation from a planar, anisotropic metamaterial", *2003 IEEE Antennas and Propagation Intl. Symposium /URSI National Radio Science Meeting*, Columbus, Ohio, June 22-27, 2003 **(invited)**.

[C49] O. Siddiqui, M. Mojahedi, S. Erickson, and G.V. Eleftheriades, "Periodically loaded transmission line with effective negative refractive index and negative group velocity", *IEEE Antennas and Propagation Intl. Symposium /URSI National Radio Science Meeting*, vol 1, pp 717-720, Columbus, Ohio, June 22-27, 2003.

[C48] M. Stickel, P.C. Kremer, and G.V. Eleftheriades, "Microstrip-fed bulk micromachined silicon cavity", *2003 IEEE Antennas and Propagation Intl. Symposium /URSI National Radio Science Meeting*, Columbus, Ohio, June 22-27, 2003.

[C47] A.K. Iyer, A. Grbic and G.V. Eleftheriades, "Sub-wavelength focusing in loaded transmission line negative refractive index metamaterials", *2003 IEEE Intl. Microwave Symposium*, pp. 200-202, Philadelphia, June 8-13, 2003 **(invited)**.

[C46] R. Islam and G.V. Eleftheriades, "A planar metamaterial co-directional coupler that couples power backwards", *2003 IEEE Itnl. Microwave Symposium Digest*, pp. 321-324, Philadelphia, June 8-13, 2003.

2002

[C45] G.V. Eleftheriades, "Planar negative refractive index metamaterials based on periodically L-C loaded transmission lines", *Workshop of Quantum Optics, Kavli Inst. of Theoretical Physics*, University of Santa Barbara, July 2002 **(invited)**.

[C44] A.K. Iyer and G.V. Eleftheriades, "Negative refractive index metamaterials supporting 2-D waves", *IEEE International Microwave Symposium*, Digest, pp. 1067-1070, Seattle, WA, June 2-7, 2002, **(2nd place in Student Paper Contest)**.

[C43] R. Abhari and G.V. Eleftheriades, "Suppression of the parallel-plate noise in high-speed circuits using metallic electromagnetic band-gap structures", *IEEE International Microwave Symposium* Digest, pp. 493-496, Seattle, WA, June 2-7, 2002, **(3rd place in Student Paper Contest)**.

[C42] [C40] A. Grbic and G.V. Eleftheriades, "A backward-wave antenna based on negative refractive index L-C networks, *Proc. of the IEEE Intl. Symposium on Antennas and Propagation*, vol. IV, pp. 340-343, June 16-21, 2002, San Antonio, TX.

[C41] M. Qiu, G. Eleftheriades, "A compact planar slot antenna element with reduced surface-wave and back-radiation losses", *Proc. of the IEEE Intl. Symposium on Antennas and Propagation*, vol. III, pp. 606-608, San Antonio, TX, June 16-21, 2002 **(2nd place in Student Paper Contest)**.

[C40] G.V. Eleftheriades, A.K Iyer, A. Grbic and O. Siddiqui, "Negative Refractive Index Metamaterials based on L-C loaded transmission lines", *Progress In Electromagnetic Research Symposium (PIERS)*, Boston, July 2002 (focused session on metamaterials).

[C39] M. Mojahedi, O. Siddiqui, J. Woodley, and G.V. Eleftheriades, "Pulse propagation and negative group delay in metamaterials", *Progress In Electromagnetic Research Symposium (PIERS), Boston*, July 2002 (focused session on metamaterials).

[C38] G.V. Eleftheriades and R. Abhari, "Fast lumped-element models for 3D vertical interconnects in multilayer PCBs", *Progress In Electromagnetic Research Symposium (PIERS)*, Boston, July 2002.

2001

[C37] B. Schoenlinner, X. Wu, G.V. Eleftheriades and G.M. Rebeiz, "Spherical lens antennas for 77 GHz automotive radars", *31st European Microwave Conference*, London, U.K., Sept. 2001.

[C36] M. Qiu, G.V. Eleftheriades, and M. Hickey, "A reduced surface-wave twin arc-slot antenna element on electrically thick substrates", *2001 IEEE Intl. Symposium on Antennas and Propagation*, Boston, MA, vol. 3, pp. 268-271, July 2001.

[C35] R. Abhari, G.V. Eleftheriades, and E. van Deventer-Perkins, "Analysis of differential vias in a parallel plate environment using a physics-based CAD model", *2001 IEEE International Microwave Symposium*, Phoenix, AZ, pp. 2031-2034, May 2001.

[C34] A. Grbic and G.V. Eleftheriades, "A new leaky uniplanar linear slot antenna array at 30 GHz", *2001 URSI International Symposium on Electromagnetic Theory*, Victoria, Canada, pp. 91-93, May 2001 **(invited)**.

2000

[C33] R. Abhari, G.V. Eleftheriades, and T.E. van Deventer-Perkins, "An equivalent circuit based on radial transmission line theory for multiple vias in a parallel plate environment", *Proceedings of the 2000 Topical IEEE Meeting on Electrical Performance of Electronic Packaging (EPEP)*, Scottsdale, AZ, pp. 135-138, Oct. 2000 **(student paper competition finalist)**.

[C32] A. Grbic and G.V. Eleftheriades, "A novel leaky millimeter-wave linear slot array for wireless communications", *Symposium on Antenna Technology and Applied Electromagnetics (ANTEM), Winnipeg*, pp. 451-454, August 2000 **(best student paper award)**.

[C31] R. Abhari and G.V. Eleftheriades, "Self-consistent lumped-element models for multiple vias in stripline structures including the parallel plate noise", *Symposium on Antenna Technology and Applied Electromagnetics (ANTEM)*, Winnipeg, pp. 125-128, August 2000.

[C30] X. Wu and G.V. Eleftheriades, "Two-Lens and lens-fed reflector antenna systems for MM-Wave wireless communications", *IEEE International Symposium on Antennas and Propagation*, Salt Lake City, UT, pp. 660-663, July 2000.

[C29] M. Qiu, M. Simcoe, and G.V. Eleftheriades, "Radiation efficiency of printed slot antennas backed by a ground reflector", *IEEE International Symposium on Antennas and Propagation*, Salt Lake City, UT, pp. 1612-1614, July 2000.

[C28] X. Wu and G.V. Eleftheriades, "Two-Lens and lens-fed reflector antenna systems for MM-Wave wireless communications", *IEEE International Symposium on Antennas and Propagation*, Salt Lake City, UT, pp. 660-663, July 2000.

[C27] M. Qiu, M. Simcoe, and G.V. Eleftheriades, "Radiation efficiency of printed slot antennas backed by a ground reflector", *IEEE International Symposium on Antennas and Propagation*, Salt Lake City, UT, pp. 1612-1614, July 2000.

Prior to 2000

[C26] X. Wu, G.V. Eleftheriades, and T.E. van Deventer, "Design and characterization of single and multiple beam MM-wave circularly polarized substrate lens antennas for wireless communications", *IEEE International Symposium on Antennas and Propagation*, Orlando, Fl, pp. 2408-2411, July 1999.

[C25] G.V. Eleftheriades, and M. Simcoe, "Gain and efficiency of linear slot arrays on thick substrates for millimeter-wave wireless applications", *IEEE International Symposium on Antennas and Propagation*, Orlando, Fl, pp. 2428-2431, July 1999.

[C24] X. Wu., G.V. Eleftheriades, and T.E. van Deventer, "Off-axis properties of an objective-lens/ substrate-lens antenna system", *XXVI General Assembly of the International Union of Radio Science*, Toronto, August, 1999 (abstract).

[C23] R. Abhari, G.V. Eleftheriades, and T.E. van Deventer, "Analysis and characterization of noise generation from vias in stripline structures", *XXVI General Assembly of the International Union of Radio Science*, Toronto, August, 1999 (abstract).

[C22] X. Wu, G.V. Eleftheriades, and T.E. van Deventer, "A 30 GHz circularly polarized substrate lens antenna for wireless communications", *Proceedings of the Symposium on Antenna Technology and Applied Electromagnetics (ANTEM)*, Ottawa, pp. 595-598, August 1998.

[C21] P. Otero, G.V. Eleftheriades and J.R. Mosig, "Slot-loop antennas on substrate lenses for mm-wave and sub-mm-wave mixer applications", *IEEE AP-S Antennas and Propagation International Symposium*, Montréal, Canada., pp. 2512-2515, July 1997.

[C20] P. Otero, G.V. Eleftheriades and J.R. Mosig, "Slot-loop antennas on substrate lenses for sub-mm-wave open structure mixers", *20th ESTEC Antenna Workshop on Millimeter Wave Antenna Techn. and Measur.*, Noordwijk, The Netherlands, pp. 193-200, June 1997.

[C19] J. Mees, H. Ekstrom, E. Kollberg, G.V. Eleftheriades, J.R. Mosig, A. Raisenen, P. Piironen, H. Hartnagel, A. Simon, T. Vaupel, and V. Hansen, "Open structure integrated Schottky receiver for space applications", *20th ESTEC Antenna Workshop on Millimeter Wave Antenna Technology and Measurements*, Noordwijk, The Netherlands, pp. 257-264, June 1997.

[C18] A. Alvarez Melcón, G.V. Eleftheriades and J.R. Mosig, "Integral equation analysis of a class of cavity backed antennas for wireless applications", *Proceedings of the 9th Journées Intl. de Nice sur les Antennas (JINA)*, Nice, France, pp. 107-110, Nov. 1996.

[C17] G.V. Eleftheriades, Hervé Le Pezennec and J.R. Mosig, "A fast and rigorous CAD procedure for complex shielded planar circuits", *IEEE MTT-S Microwave Symposium* Digest, pp. 1467-1470, San Francisco, CA, 1996.

[C16] G.V. Eleftheriades, Jean-François-Zürcher, and J.R. Mosig, "Patterns and efficiencies of slot-fed mm-wave glass-ceramic substrate lens antennas", *Proceedings of the ESA/ESTEC Workshop on Millimetre Wave Technology and Applications*, pp. 2.2.1-2.2.13, Noordwijk, The Netherlands, Dec. 1995.

[C15] G.V. Eleftheriades, and J.R. Mosig, "Advances in the development of an efficient planar-circuit CAD tool", *Proceedings of the ESA/ESTEC Workshop on Advanced CAD for Filter and Passive MW Devices*, pp. 69-79, Noordwijk, The Netherlands, Nov. 1995.

[C14] G.V. Eleftheriades, J.R. Mosig, and M. Guglielmi, "An efficient mixed potential integral equation technique for the analysis of shielded MMIC's",'*Proceedings of the 25th European Microwave Conference*, pp. 825-829, Bologna, Italy, Sept. 1995.

[C13] D. Filipovic, G.V. Eleftheriades, and G.M. Rebeiz, "Off-axis imaging properties of substrate lens antennas", *Fifth International Symposium on Space Terahertz Tech.*, Ann Arbor, MI, pp. 778-787, February 1994.

[C12] G.V. Eleftheriades and G.M. Rebeiz, "Cavity backed printed dipole arrays with substrate mode control using via-hole technology", *IEEE AP-S Antennas and Propagation International Symposium*, Ann Arbor, MI, USA, pp. 592-595, July 1993.

[C11] G.M. Rebeiz, B. Kormanyos, W. Ali-Ahmad and G.V. Eleftheriades, "Integrated millimeter-wave receivers and active antennas", *Journèes Intl. de Nice sur les Antennas (JINA)*, Nice, France, pp. 561-568, Nov. 1992.

[C10] G.V. Eleftheriades, Chen-Yu Chi, Steven S. Gearhart and G.M. Rebeiz, "Dielectric-slab loaded integrated horn antennas", *Proc. 17th Int. Conf. Infrared and Millimeter Waves*, Pasadena, CA, pp. 276-277, Dec. 1992.

[C9] G.M. Rebeiz, Chen-Yu Chi, B.K. Kormanyos, G.V. Eleftheriades, and W.Y. Ali-Ahmad, "Millimeter-wave integrated-horn antennas and quasi-optical balanced receivers", *International Symposium on Antennas and Propagation*, Sapporo, Japan, pp. 1137-1140, 1992.

[C8] G.V. Eleftheriades and G.M. Rebeiz, "A systematic approach towards the design of quasi-integrated horn antennas for receiver applications", *IEEE AP-S Antennas and Propagation International Symposium*, Chicago, Illinois, pp. 285-287, July 1992 **(student paper award)**.

[C7] G.V. Eleftheriades, W.Y. Ali-Ahmad, and G.M. Rebeiz, "Progress in integrated circuit horn antennas for receiver applications: Part I and II", *2nd International Symposium on Space Terahertz Tech.*, Pasadena, CA, pp. 324-344, March 1992.

[C6] G.V. Eleftheriades and G.M. Rebeiz, "A high-gain quasi-integrated horn antenna", *16th Int. Conf. Infrared and Millimeter Waves*, Lausanne, Switzerland, pp. 505-506, August 1991.

[C5] G.V. Eleftheriades, L.P.B. Katehi, and G.M. Rebeiz, "High-gain step-profiled integrated horn antennas", *IEEE AP-S Antennas and Propagation International Symposium*, Toronto, pp. 980-983, June 1991.

[C4] W.Y Ali-Ahmad, G.V. Eleftheriades, and G.M. Rebeiz, "Millimeter-wave integrated diagonal horn antennas", *IEEE AP-S Antennas and Propagation International Symposium*, Toronto, pp. 985-986, June 1991.

[C3] W.Y. Ali-Ahmad, G.V. Eleftheriades and G.M. Rebeiz, "Progress in 94GHz integrated horn antennas", *6th Journèes Intl. de Nice sur les Antennas (JINA)*, Nice, France, Nov. 1990 **(best paper award)**.

[C2] [C2] G.V. Eleftheriades, W.Y. Ali-Ahmad, L.P.B. Katehi and G.M. Rebeiz, "Radiation pattern and input impedance of dipole-fed horn antennas", *URSI-B Radio Science Meeting*, Dallas, Texas, U.S.A., May 1990 (abstract).

[C1] G.V. Eleftheriades, W.Y. Ali-Ahmad, L.P.B. Katehi and G.M. Rebeiz, "Theoretical analysis of a dipole-fed horn antenna", *First International Symposium on Space Terahertz Tech.*, Ann Arbor, MI, U.S.A., March 1990.