

Assoc. Prof. Dipl.-Ing. Dr.techn. Holger Arthaber



Personal Details

Date of Birth: 1975 in Vienna, Austria
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Education

2017 TU Wien, Habilitation (venia docendi) in “Radio Frequency Engineering”, Habilitation title: “Digitally Driven Switched Mode Power Amplifiers (Amplifier Design, Digital Modulation, and Modeling)”
2000–2004 TU Wien, Doctoral/PhD study, completed with distinction, thesis title: “Harmonic Load Pull Methods”
1995–2000 TU Wien, Diploma study in electrical engineering/communication engineering, focus on signal processing and radio frequency engineering, finished with distinction, thesis title: “Algorithmen zur Kombination von Diversitätssignalen in GSM” (“Algorithms for Diversity Combining in GSM”)

Academic Career and Work Experience

2017–now TU Wien, Institute of Electrodynamics, Microwave and Circuit Engineering; Associate Professor, Head of Microwave Engineering Group (full-time)
2015–now Brno University of Technology, Czech Republic, external peer and advisor of Antennas and High-frequency Circuits Group (4h/week)
2009–2017 TU Wien, Institute of Electrodynamics, Microwave and Circuit Engineering; Assistant Professor, Head of Microwave Engineering Group
2000–2008 TU Wien, Institute of Electrical Measurements and Circuit Design
1999–2000 TU Wien, Institute of Communications and Radio Frequency Engineering; Research Assistant
1998–2000 Freelancer (Embedded systems HW/SW-design for several companies)

Achievements

2017 Austrian Standards: Living Standards Awards 2017, Category Projects
2014 Austrian Patent Office: Inventum 2013, top ten patents of the year
2004 TU Wien: Dr. Ernst Fehrer Preis
2004 Arbeitskreis der Hochschullehrer für Messtechnik e.V.: Messtechnik-Preis
2001 Wirtschaftskammer Wien: Technikpreis der Wiener Wirtschaft

Current Teaching

- “RF Techniques” (mandatory course, 6 ECTS, held 2011–now)
- “Lab RF Techniques” (mandatory course, 3 ECTS, held 2004–now)
- “Advanced RF Techniques” (optional course, 6 ECTS, held 2003–now)
- “Seminar RF Techniques” (optional course, 3 ECTS, held 2003–now)
- “Bachelorarbeit mit Seminar” (mandatory course, 10 ECTS, held 2012–now)

Past Teaching

- “Seminar for Diploma Students” (mandatory course, 3 ECTS, held 2014–2016)
- “Messtechnik” (mandatory course, 4 ECTS, held 2000–2013)
- “Messtechnik Labor” (mandatory course, 2 ECTS, held 2000–2013)
- “Messgeräte – Eine Einführung” (optional course, 1 ECTS, held 2001–2013)
- “Steuerungstechnik” (optional course, 1 ECTS, held 2000–2012)
- “Projektarbeit (Übergangsregelung B.-Arbeit)” (optional course, 2.5 ECTS, held 2012)
- “Messtechnik, Bakkalaureats-Vertiefung” (optional course, 7.5 ECTS, held 2004–2011)
- “EDV-orientierte Projektarbeit für Elektrotechnik” (optional course, held 2000–2004)
- “Programmierpraktikum” (optional course, held 2000–2004)
- “Messtechnik, Vertiefung” (optional course, held 2003)
- “Hochfrequenztechnik 1” (optional course, held 2002)
- “Elektronische Schaltungstechnik” (optional course, held 2001)
- “Einführungspraktikum Elektrotechnik” (optional course, held 2000)
- “Einf. Elektrotechnik Labor” (optional course, held 2000)

Theses Supervision

- PhD theses: Assistive supervisor of 4 ongoing and 3 finished PhD theses
- Diploma theses: Supervisor of 4 ongoing and 19 finished diploma theses
- Bachelor theses/projects: Supervisor of 33 finished bachelor theses

Research Interests

- Antenna design and measurements
- Digitally (binary) driven RF power amplifiers
- Load-pull techniques (active/broadband loads, IF-calibration techniques)
- Material characterization
- Microwave sensing
- Microwave system design
- Mixed digital/RF circuits (incl. real-time signal processing)
- Modeling and linearization of RF power amplifiers (with focus on digitally driven amplifiers)
- Nonlinear measurement techniques (LSNA, X-parameters, pulsed measurements)
- RFID systems (channel measurement/emulation, localization algorithms)
- Switched mode power amplifiers

Research Projects

Project manager of 3 ongoing and 30 research projects in the past ten years. Obtained funds over 2.5 million Euros. Projects include EU-funded activities, national funding, and cooperation with industry.

Activities in the Scientific and Academic Community

(Not including non-regular activities)

2018–	Editorial Board Member of International Journal of RF and Microwave Computer-Aided Engineering
2017	Organizer of 5 th Workshop of Radio Frequency Working Group (ARGE HFT), September 28 th /29 th , 2017
2017	IEEE Transactions for Microwave Theory and Techniques, Guest Editor for INMMiC-related mini issue
2017	TPC chair, “International Workshop on Integrated Nonlinear Microwave and Millimetre-wave Circuits (INMMiC)”, Graz, Austria, April 20 th –21 st , 2017
2015–now	Co-operation with Brno University of Technology, peer and external advisor of Antennas and High-frequency Circuits Group (INWITE project)
2013–now	Member of “Radio Frequency Working Group of the Austrian Research Association” (ARGE HFT)
2012–now	TPC Member “The European Conference on Antennas and Propagation (EuCAP)”
2012	Panel Member, Academy of Finland, Wireless Data Transfer Review Panel
2012	Contributions to RF teaching of Telecommunication Master Curriculum
2011	Chair and Organizer of “International Workshop on Integrated Nonlinear Microwave and Millimetre-wave Circuits (INMMiC)”, Vienna, Austria April 18 th –19 th , 2011
2011–now	URSI Austria, Head of Commission B (Fields and Waves)
2011–now	TPC Core and Steering Committee Member of “International Workshop on Integrated Nonlinear Microwave and Millimetre-wave Circuits (INMMiC)”
2010–now	Reviewer for “Radioengineering Journal” (Proceedings of Czech and Slovak Technical Universities)
2008–now	TPC Member “The International EURASIP Workshop on RFID Technology”
2008–now	Reviewer for “The European Microwave Conference (EuMC)”
2007	Co-Chair and Co-Organizer of “The First International EURASIP Workshop on RFID Technology”, RFID 2007, Vienna, Austria, September 24 th –25 th , 2007

Publication sorted by dominant research field

(Only fields with ≥ 4 publications listed)

Antenna design and measurement

[J.19], [J.17], [J.16], [C.32], [C.26]

Microwave sensing and material characterization

[J.21], [J.20], [J.12], [J.10], [J.9], [J.3], [C.63], [C.61], [C.54], [C.53], [C.43], [C.40], [C.19]

RF power amplifiers – design of analog PAs

[J.2], [J.1], [C.21], [C.4], [C.3], [I.5]

RF power amplifiers – design of digital switched mode PAs

[J.6], [C.48], [C.42], [C.38], [C.33]

RF power amplifiers – load/source pull

[M.2], [B.1], [J.4], [C.13], [C.12], [C.8], [C.6], [C.5], [I.10], [I.9], [I.8], [I.7], [I.6], [I.4], [I.3], [I.2], [I.1]

RF power amplifiers – nonlinear modeling of digital switched mode PAs

[J.18], [J.15], [C.64], [C.60], [C.55], [C.52], [C.49], [C.44], [C.39], [C.37], [C.34]

RF power amplifiers – nonlinear modeling of analogue PAs

[C.65], [C.62], [C.56], [C.14], [C.11], [C.10], [C.9], [C.7]

RF power amplifiers – signal processing for digital switched mode PAs

[J.11], [J.8], [C.31], [C.30]

Radio frequency identification

[J.23], [J.22], [J.14], [J.7], [C.59], [C.58], [C.50], [C.45], [C.28], [C.27], [C.25], [C.24], [C.23], [C.20], [C.18], [C.17], [C.16], [I.12], [I.11]

Terahertz electronics

[J.13], [C.47], [C.46], [C.41], [C.35]

Publication list

Monographs

- [M.2] H. Arthaber, "Harmonic Load Pull Methods", PhD thesis, TU Wien, March 2004.
- [M.1] H. Arthaber, "Algorithms for Combining Diversity Signals in GSM", diploma thesis, TU Wien, Feb. 2000.

Book chapters

- [B.2] H. Schweinzer, S. F. Shaukat, H. Arthaber, "Media," in *The Industrial Electronics Handbook, second edition*, eds. B. M. Wilamowski and J. D. Irwin, CRC Press, Mar. 2011, pp. 2-1–2-17, doi: 10.1201/b10603-4.
- [B.1] H. Arthaber, M. Mayer: "Source and Load Pull Techniques," in *Characterization and Modelling Approaches for Advanced Linearisation Techniques*, Nov. 2005, pp. 27–62, ISBN 81-308-0027-6.

Journals (peer-reviewed)

- [J.23] F. Galler, S. Grebien, T. Faseth, K. Witrisal, G. Magerl, H. Arthaber, "Extension of an SDR UHF RFID Testbed for MIMO and Monostatic Time of Flight Based Ranging," *IEEE Journal of Radio Frequency Identification*, IEEE Early Access, doi: 10.1109/JRFID.2017.2749200
- [J.22] S. Grebien, J. Kulmer, F. Galler, M. Goller, E. Leitinger, H. Arthaber, K. Witrisal, "Range Estimation and Performance Limits for UHF-RFID Backscatter Channels," *IEEE Journal of Radio Frequency Identification*, IEEE Early Access, doi: 10.1109/JRFID.2017.2749514
- [J.21] O. Huber, H. Arthaber, "Dielectric Characterization of RF-Printed Circuit Board Materials by Microstrip Transmission Lines and Conductor-Backed Coplanar Waveguides up to 110 GHz," *IEEE Transactions on Microwave Theory and Techniques*, IEEE Early Access, doi: 10.1109/TMTT.2017.2750152
- [J.20] A. Aichholzer, C. Schuberth, H. Mayer, H. Arthaber, "Microwave Testing of Moist and Oven-Dry Wood to evaluate Grain Angle, Density, Moisture Content and the Dielectric Constant of Spruce from 8 GHz to 12 GHz," *European Journal of Wood and Wood Products*, pp. 1–15, May 2017, doi: 10.1007/s00107-017-1203-x
- [J.19] J. Puskely, T. Mikulasek, J. Lacik, Z. Raida, H. Arthaber, "SIW-Fed Vivaldi Antenna with Beam Steering Capabilities", *Microwave and Optical Technology Letters*, vol 59, issue 5, pp. 1022–1027, May 2017, doi: 10.1002/mop.30447
- [J.18] N. Leder, B. Pichler, T. Faseth, H. Ruotsalainen, H. Arthaber, "Hierarchical Table Based Model for All-Digital RF-Transmitters," *IEEE Transactions on Microwave Theory and Techniques*, vol. 65, issue 3, March 2017, doi: 10.1109/TMTT.2016.2630068
- [J.17] J. Lambor, J. Lacik, Z. Raida, H. Arthaber, "High-Gain Wideband SIW Offset Parabolic Antenna," *Microwave and Optical Technology Letters*, vol. 58, issue 12, pp. 2888–2892, Dec. 2016, doi: 10.1002/mop.30170
- [J.16] J. Puskely, J. Lacik, Z. Raida, H. Arthaber, "High Gain Dielectric Loaded Vivaldi Antenna for Ka Band Applications," *IEEE Antennas and Wireless Propagation Letters*, vol. 15, no. 1, pp. 2004–2007, Dec. 2016, doi: 10.1109/LAWP.2016.2550658
- [J.15] H. A. Ruotsalainen, N. Leder, B. Pichler, H. Arthaber, G. Magerl, "Equivalent Complex Baseband Model for Digital Transmitters Based on 1-bit Quadrature Pulse Encoding," *IEEE Transactions on Circuits and Systems-I: Regular Papers*, vol. 62, no. 11, pp. 2739–2747, Oct. 2015, doi: 10.1109/TCSI.2015.2476395.
- [J.14] H. Arthaber, T. Faseth, F. Galler, "Spread-Spectrum Based Ranging of Passive UHF EPC RFID Tags," *IEEE Communications Letters*, vol. 19, no. 10, pp. 1734–1737, Oct. 2015, doi: 10.1109/LCOMM.2015.2469664.
- [J.13] D. Bachmann, N. Leder, M. Rösch, G. Scalari, M. Beck, H. Arthaber, J. Faist, K. Unterrainer, J. Darmo, "Broadband terahertz amplification in a heterogeneous quantum cascade laser," *Optics Express*, vol. 23, no. 3, pp. 3117–3125, Feb. 2015, doi: 10.1364/OE.23.003117.

- [J.12] J. K. Denzler, C. Lux, H. Arthaber, "Contactless moisture content and density evaluation of sawn timber using microwave transmission," *International Wood Products Journal*, vol. 5, no. 4, pp. 200–206, Nov. 2014, doi: 10.1179/2042645314Y.0000000066.
- [J.11] H. A. Ruotsalainen, H. Arthaber, T. I. Laakso, G. Magerl, "Quantization Noise Reduction Techniques for Digital Pulsed RF Signal Generation Based on Quadrature Noise Shaped Encoding," *IEEE Transactions on Circuits and Systems–I: Regular Papers*, vol. 61, no. 9, pp. 2525–2536, July 2014, doi: 10.1109/TCSI.2014.2332259.
- [J.10] A. Aichholzer, H. Arthaber, C. Schuberth, H. Mayer, "Non-Destructive Evaluation of Grain Angle, Moisture Content and Density of Spruce with Microwaves," *European Journal of Wood and Wood Products*, vol. 71, no. 6, pp. 779–786, Nov. 2013, doi: 10.1007/s00107-013-0740-1.
- [J.9] J. K. Denzler, J. Koppensteiner, H. Arthaber, "Grain angle detection on local scale using microwave transmission," *International Wood Products Journal*, vol. 4, no. 2, pp. 68–74, May 2013, doi: 10.1179/2042645313Y.0000000030.
- [J.8] H. A. Ruotsalainen, H. Arthaber, G. Magerl, "A New Quadrature PWM Modulator with Tunable Center Frequency for Digital RF Transmitters," *IEEE Transactions on Circuits and Systems–II: Express Briefs*, vol. 59, no. 11, pp. 756–760, Nov. 2012, doi: 10.1109/TCSII.2012.2222834.
- [J.7] H. Arthaber, T. Faseth, M. Winkler, "Emulation des Funkkanals und des Transponders in UHF-Mautsystemen," *e&i Elektrotechnik und Informationstechnik*, vol. 128, no. 7–8, pp. 282–287, Aug. 2011, doi: 10.1007/s00502-011-0017-5.
- [J.6] C. Schubert, P. Singerl, M. E. Gadringer, H. Arthaber, A. Wiesbauer, G. Magerl, "Highly Efficient Switched-Mode Transmitter Using a Current Mode Class-D RF Amplifier," *International Journal of RF and Microwave Computer-Aided Engineering*, vol. 20, no. 4, pp. 446–457, July 2010, doi: 10.1002/mmce.20450.
- [J.5] A. Adalan, G. Simhandl, H. Arthaber, "Robuste funkbasierte Sensornetze – Aktuelle Forschungsaktivitäten und innovative Lösungsansätze für infrastrukturlose Positionierungssysteme," *e&i Elektrotechnik und Informationstechnik*, vol. 127, no. 3, pp. 47–55,
- [J.4] H. Arthaber, M. L. Mayer, G. Magerl, "An active load-pull setup for broadband signals using digital baseband processing for the active loop," *International Journal of RF and Microwave Computer-Aided Engineering*, vol. 18, no. 6, pp. 574–581, Nov. 2008, doi: 10.1002/mmce.20333.
- [J.3] B. Považay, A. Unterhuber, B. Hermann, H. Sattmann, H. Arthaber, W. Drexler, "Full-field time-encoded frequency-domain optical coherence tomography," *Optics Express*, vol. 14, no. 17, pp. 7661–7669, Aug. 2006, doi: 10.1364/OE.14.007661.
- [J.2] H. Arthaber, "In-situ Messung von Strom- und Spannungsverläufen in Mikrowellentransistoren," *Technisches Messen*, vol. 72, no. 4, pp. 205–214, Apr. 2005, doi: 10.1524/teme.72.4.205.62918.
- [J.1] H. Arthaber, M. L. Mayer, A. Gafni, M. E. Gadringer, G. Magerl, "A Time Domain Large Signal Measurement Setup," *International Journal of RF and Microwave Computer-Aided Engineering*, vol. 15, no. 1, pp. 3–12, Jan. 2005, doi: 10.1002/mmce.20041.

Conference Proceedings (peer-reviewed)

- [C.65] B. Pichler, N. Leder, G. Magerl, H. Arthaber, "Experimental Study on Load Dependent X-Parameter Models for PA Design," in *Proc. 2017 IEEE Radio and Antenna Days of the Indian Ocean (RADIO)*, Cape Town, South Africa, Sep. 2017, to be published
- [C.64] N. Leder, B. Pichler, G. Magerl, H. Arthaber, "Compacting Look-Up-Table Models for All-Digital RF-Transmitters," in *Proc. 2017 IEEE Radio and Antenna Days of the Indian Ocean (RADIO)*, Cape Town, South Africa, Sep. 2017, to be published
- [C.63] O. Huber, G. Magerl, H. Arthaber, "Impact of Different Surface Finishes on Insertion Loss for Microstrip Resonators up to 110 GHz," in *Proc. 2017 IEEE Radio and Antenna Days of the Indian Ocean (RADIO)*, Cape Town, South Africa, Sep. 2017, to be published
- [C.62] B. Pichler, N. Leder, G. Magerl, H. Arthaber, "Load Error Correction for High Power Load Dependent X-Parameter Measurements," in *Proc. 12th European Microwave Integrated Circuits Conference (EuMIC)*, Nuremberg, Germany, Oct. 2017, to be published
- [C.61] O. Huber, G. Magerl, H. Arthaber, "Dispersion Behavior of the Apparent Permittivity for Quasi-TEM Transmission Lines up to 110 GHz," in *Proc. 47th European Microwave Conference (EuMC)*, Nuremberg, Germany, Oct. 2017, to be published

- [C.60] N. Leder, B. Pichler, G. Magerl, H. Arthaber, "Robust Verification of Look-Up-Table-Based Models for All-Digital RF-Transmitters," in *Proc. 12th European Microwave Integrated Circuits Conference (EuMIC)*, Nuremberg, Germany, Oct. 2017, to be published
- [C.59] F. Galler, S. Hinteregger, T. Faseth, N. Leder, G. Magerl, H. Arthaber, "Performance Evaluation and Verification of Spread-Spectrum Based UHF RFID Ranging," in *2017 IEEE International Conference on RFID (RFID)*, pp. 124–129, Phoenix, USA, May 2017, doi: 10.1109/RFID.2017.7945597
- [C.58] S. Hinteregger, J. Kulmer, M. Goller, F. Galler, H. Arthaber, K. Witrissal, "UHF-RFID Backscatter Channel Analysis for Accurate Wideband Ranging," in *2017 IEEE International Conference on RFID (RFID)*, pp. 117–123, Phoenix, USA, May 2017, doi: 10.1109/RFID.2017.7945596
- [C.57] E. Auerbach, S. Gider, G. Albuquerque, N. Leder, H. Arthaber, D. Süß, "High-frequency modes of the dual free layer sensor," in *2017 IEEE International Magnetics Conference (INTERMAG)*, Dublin, Ireland, April 2017, doi: 10.1109/INTMAG.2017.8007851
- [C.56] B. Pichler, N. Leder, G. Magerl, H. Arthaber, "On the Dependability of Load Dependent X-Parameter Models for Varying Loads," in *The International Workshop on Integrated Nonlinear Microwave and Millimetre-wave Circuits (INMMiC)*, Graz, Austria, Apr. 2017, doi: 10.1109/INMMiC.2017.7927306
- [C.55] N. Leder, B. Pichler, G. Magerl, H. Arthaber, "Delay Compensation and Tracking for All-Digital RF-Transmitter Models," in *The International Workshop on Integrated Nonlinear Microwave and Millimetre-wave Circuits (INMMiC)*, Graz, Austria, Apr. 2017, doi: 10.1109/INMMiC.2017.7927307
- [C.54] E. Auerbach, N. Leder, S. Gider, D. Süß, H. Arthaber, "Characterization of Dynamic Nonlinear Effects in MTJ-Based Magnetic Sensors," in *The International Workshop on Integrated Nonlinear Microwave and Millimetre-wave Circuits (INMMiC)*, Graz, Austria, Apr. 2017, doi: 10.1109/INMMiC.2017.7927309
- [C.53] O. Huber, T. Faseth, H. Arthaber, E. Schläffer, "Optimized Launching Pads for Investigating Transmission Line Losses for Different Surface Finishes of RF-PCBs up to 110 GHz," in *Proc. IEEE International Microwave and RF conference (IMaRC)*, Hyderabad, India, pp. 165–168, Dec. 2015, doi: 10.1109/IMaRC.2015.7411371.
- [C.52] N. Leder, B. Pichler, H. Ruotsalainen, T. Faseth, H. Arthaber, "On nonlinear memory effects in all digital RF-transmitters," in *Proc. IEEE International Microwave and RF conference (IMaRC)*, Hyderabad, India, pp. 300–303, Dec. 2015, doi: 10.1109/IMaRC.2015.7411377
- [C.51] P. Krivic, G. Radosavljevic, S. Birgermajer, N. Cselyuszka, H. Arthaber, "Design and Fabrication of the Bosma Stripline Circulator in LTCC Technology," in *Proc. International Conference on Microwaves, Communications, Antennas and Electronic Systems (COMCAS)*, Tel Aviv, Israel, Nov. 2015, doi: 10.1109/COMCAS.2015.7360454.
- [C.50] F. Galler, T. Faseth, H. Arthaber, "Implementation aspects of an SDR based EPC RFID reader testbed," in *2015 International EURASIP Workshop on RFID Technology (EURFID'15)*, Rosenheim, Germany, pp. 94–97, Oct. 2015, doi: 10.1109/EURFID.2015.7332391.
- [C.49] N. Leder, B. Pichler, H. Ruotsalainen, T. Faseth, H. Arthaber, "Nonlinear Simulation of Digital RF Transmitters Under Modulated Excitation," in *The International Workshop on Integrated Nonlinear Microwave and Millimetre-wave Circuits (INMMiC)*, Taormina, Italy, Oct. 2015, doi: 10.1109/INMMiC.2015.7330359.
- [C.48] B. Pichler, N. Leder, T. Faseth, H. Arthaber, "Calibration Method for Coupler Based Time Domain Waveform Measurements," in *The International Workshop on Integrated Nonlinear Microwave and Millimetre-wave Circuits (INMMiC)*, Taormina, Italy, Oct. 2015, doi: 10.1109/INMMiC.2015.7330363.
- [C.47] D. Bachmann, N. Leder, M. Rösch, G. Scalari, M. Beck, H. Arthaber, J. Faist, K. Unterrainer, J. Darmo, "Broadband quantum cascade laser based terahertz amplifier with an integrated emitter," in *EQEC 2015 - Conference Digest CLEO Europe 2015*, München, Deutschland, June 2015, ISBN: 978-1-4673-7475-0.
- [C.46] D. Bachmann, N. Leder, M. Rösch, M. Beck, H. Arthaber, J. Faist, K. Unterrainer, J. Darmo, "Amplification of broadband terahertz pulses in a quantum cascade heterostructure," in *Abstracts in Laser Science to Photonic Applications CLEO 2015*, San Jose, CA, USA, May 2015, doi: 10.1364/CLEO_SI.2015.SM1H.6.
- [C.45] F. Galler, T. Faseth, H. Arthaber, "SDR based EPC UHF RFID Reader DS-SS Localization Testbed," in *Proc. IEEE Wireless and Microwave Technology Conference WAMICON*, Cocoa Beach, USA, Apr. 2015, doi: 10.1109/WAMICON.2015.7120382.

- [C.44] N. Leder, T. Faseth, H. Ruotsalainen, H. Arthaber, "Computationally efficient table based modeling for digital RF transmitters," in *Proc. IEEE Wireless and Microwave Technology Conference WAMICON*, Cocoa Beach, USA, Apr. 2015, doi: 10.1109/WAMICON.2015.7120371.
- [C.43] O. Huber, T. Faseth, H. Arthaber, E. Schlaffer, "Characterization of Printed Circuit Board Material & Manufacturing Technology for High Frequency Applications up to 110 GHz," in *Proc. IEEE Wireless and Microwave Technology Conference (WAMICON)*, Cocoa Beach, USA, Apr. 2015, doi: 10.1109/WAMICON.2015.7120406.
- [C.42] B. Pichler, N. Leder, T. Faseth, H. Arthaber, G. Magerl, "Efficiency Enhanced Switched Mode Power Amplifier for Digital RF Transmitters," in *Proc. IEEE Wireless and Microwave Technology Conference (WAMICON)*, Cocoa Beach, USA, Apr. 2015, doi: 10.1109/WAMICON.2015.7120392.
- [C.41] D. Bachmann, N. Leder, M. Rösch, G. Scalari, M. Beck, H. Arthaber, J. Faist, K. Unterrainer, J. Darmo, "Broadband terahertz amplification in a heterogeneous quantum cascade structure," in *International Workshop on Optical Terahertz Science and Technology (OTST 2015)*, San Diego, CA, USA, Mar. 2015.
- [C.40] O. Huber, T. Faseth, H. Arthaber, E. Schlaffer, "Characterization of Printed Circuit Board Material & Manufacturing Technology for High Frequency Applications", in *IPC APEX EXPO 2015*, San Diego, USA, pp. 1–11, Feb. 2015.
- [C.39] N. Leder, T. Faseth, H. A. Ruotsalainen, H. Arthaber, "Characterization and Modeling of Pulse Drivers for Switch Mode Power Amplifier Measurements," in *Proc. IEEE Topical Conference on Power Amplifiers for Wireless and Radio Applications (PAWR)*, San Diego, USA, pp. 1–4, Jan. 2015, doi: 10.1109/PAWR.2015.7139213.
- [C.38] B. Pichler, N. Leder, T. Faseth, H. Arthaber, "Design of a PWM Driven Continuous Mode Class F Amplifier using Harmonic Load Pull Measurements," in *Proc. Mediterranean Microwave Symposium (MMS)*, Marrakesh, Morocco, pp. 1–3, Dec. 2014, doi: 10.1109/MMS.2014.7088942.
- [C.37] N. Leder, T. Faseth, H. A. Ruotsalainen, H. Arthaber, "Nonlinear Modeling and Model-Validation for Digital Switched Mode RF Power Amplifiers," in *Proc. Mediterranean Microwave Symposium (MMS)*, Marrakesh, Morocco, pp. 73, Dec. 2014, doi: 10.1109/MMS.2014.7088934.
- [C.36] B. Haindl, J. Meser, S. Müller, H. Arthaber, T. Faseth, M. Zaisberger, "LDACS1 Conformance and Compatibility Assessment," in *33rd Digital Avionics Systems Conference Proc.*, Colorado Springs, USA, pp. 5-9, Oct. 2014, doi: 10.1109/DASC.2014.6979447.
- [C.35] D. Bachmann, M. Krall, M. Rösch, G. Scalari, N. Leder, H. Arthaber, M. Beck, J. Faist, K. Unterrainer, J. Darmo, "Towards a broadband metal-metal terahertz quantum cascade laser amplifier," in *Technical Digest International Quantum Cascade Lasers School & Workshop (IQCLSW 2014)*, Policoro, Italy, Sept. 2014, ISBN 978-1-4799-3454-6.
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Invited Talks

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- [I.10] H. Arthaber, "Active Load-Pull Using Broadband Signals," in *Proc. WHMO4 Advanced Non-Linear Characterization of RF and Microwave Components (Workshop European Microwave Conference)*, Rome, Italy, Sept. 2009.
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Patents

Granted Patents

- [P.3] H. Arthaber et al, "Method for access control," EP2584541 B1, granted Aug. 2015
- [P.2] H. Arthaber, "Method and system for locating objects", US9471820 B2, granted Oct. 2016, AT511750 B1, granted June 2013
- [P.1] H. Arthaber, "Method and Apparatus for Measuring Signal Phase Shifts," EP2261686 B1, granted Dec. 2012; US8335247 B2, granted Dec. 2012

Patent Applications

- [PA.4] H. Arthaber et al, "Method and Apparatus for estimating the projection on a reference plane of the direction of extension of the fibres of a portion of a wooden plank," ITBZ20130037 A1, EP2829876 A1, filed July 2013 and July 2014
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Public Outreach

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- [O.8] H. Arthaber, N. Leder, "Mikrowellentechnik (Microwave Engineering)," in *Meet the Inner Circle – Presentations*, Open Day, TU Wien, Vienna, years 2014–2017.
- [O.7] H. Arthaber, "RFID Real-Time Localization for Flexible Production Environments (REFlex)," in *IKT der Zukunft und ICT in Horizon 2020 – Presentation of Reference Projects*, Austrian Research Promotion Agency (FFG), Vienna, Nov. 2015.
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- [O.1] H. Arthaber, W. Ehrlich-Schupita, "Was verbirgt sich hinter dem elektromagnetischen Spektrum? (What is the so called electromagnetic spectrum?)," in *Hands-on Measurements and Demonstrations, Yo! Einstein*, TU Wien, Vienna, years 2005–2006.