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# Josef Dobeš

## Personal Page

dobes@feld.cvut.cz

Fully tested on Internet Explorer 10. For a correct function with Mozilla Firefox 21 and higher, setting 'Adobe Acrobat' is necessary: Tools → Options → Applications → Portable Document Format (PDF) → Use Adobe Acrobat (in Firefox)

THIS WEB PAGE WILL FULLY BE UPDATED DURING THE SUMMER PERIOD OF 2017

Czech Technical University in Prague, Dept. of Radio Engineering



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## 1. About Me...

Assoc. Prof. Josef DOBEŠ, MSc., Ph.D. (WoS-type H-index=6) is with the Department of Radioelectronics, Faculty of Electrical Engineering, Czech Technical University in Prague, in the position of deputy head of the Department. His research effort is aimed at the following three themes:

- physical modeling of electronic elements, especially microwave semiconductor devices and transmission lines;
- creating and improving algorithms for the analysis and optimization of linear and nonlinear circuits, for example, solving a system of nonlinear algebraic-differential equations, including the steady-state algorithm, solving the generalized eigenvalue problem to determine the poles and zeros of a transfer function, sensitivity analysis, large-scale analysis, and optimization;
- creating a comprehensive program system for computer-aided design – he is the author of the C.I.A. (Circuit Interactive Analyzer) program, which was implemented in more than thirty installations at companies, research institutes, and universities.



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He is the first author or co-author of more than 160 scientific publications. Totally, his 71 papers are indexed in Web of Science (18 in journals in WoS); he obtained 72 citations in Web of Science (excluding direct and indirect self-citations); totally, there exist his 177 citations in Web of Science. His scientific works were cited (excluding direct and indirect self-citations) in the following journals of the prestigious IEEE Transactions chain: IEEE Transactions on – Power Electronics – Electron Devices – Advanced Packaging – Circuits and Systems – Computer-Aided Design of Integrated Circuits and Systems – Microwave Theory and Techniques – Electromagnetic Compatibility

He took part in solving the TEMPUS project CME-94-CZ-1003, Czech Scientific Foundation (CSF) projects Nos. 101/93/0838, 102/93/2185, 102/98/1464, 102/02/0156, and GD 102/03/H086. He was a joint applicant of the (successfully solved) CSF projects No 102/01/0432, 102/05/0277, 102/08/0784, P102/10/1614, and P102/10/1665. He was also among the researchers of the project of the Framework EU project Network of Excellence "TARGET". He also was the applicant of the projects A-950/2006 and A-826/2009 of the Czech Ministry of Education. He is a member of a team of Centrum of Competence, TE01020186 – Centrum of Integrated Satellite and Terrestrial Navigation Technologies of the Technology Agency of the Czech Republic.



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## 2. Vyučované předměty

- 📖 X37CAD, XD37CAD – CAD ve sdělovací technice
- 📖 XE37CAD – CAD in Communications
- 📖 X37RFB – Rádiové funkční bloky
- 📖 X37ZKT, XD37ZKT – Základy komunikační techniky
- 📖 XE37ZKT – Fundamentals of Communications
- 📖 X37ZRD, XD37ZRD – Základy radioelektroniky
- 📖 Y37BKS – Bezdrátové komunikační systémy

### Doktorské studium:

XP37NRO – Návrh radioelektronických obvodů počítačem



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### 3. Authorized Software


 Automated Converter **WinConv** of the PSpice and Micro-CAP Netlist or Library Files to the CIA (Circuit Interactive Analyzer) Input

 Automated Converter **1SCHEME** of both EEDraw and OrCAD Diagram & Netlist Files to the CIA (Circuit Interactive Analyzer) Input

 Programmer's Integrated Development Environment (IDE) **WinF77** for Creating the User-Defined Models in Electronic Circuit Simulators

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- Sparse-Matrix LU Factorization in Common LISP (CLASP) functional programming language: <https://github.com/openlisp/clasp>

 Program CIA (Circuit Interactive Analyzer) with **Enhanced Types of Algorithms for Sparse-Matrix LU Factorization With Suppressed Fill-In and Improved Accuracy** (Modified Petersen and Markowitz Ones) at <http://radio.feld.cvut.cz/personal/dobes2/fill-in.zip>

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(All the archives can be opened by the WinZip or similar programs.)



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
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## 4. PDFs for Education

-  Shannon-Hartley Law (Presentation)
-  Shannon-Hartley Law (Print)
-  Amplitude Modulation (Presentation)
-  Amplitude Modulation (Print)
-  Angle Modulation (Presentation)
-  Angle Modulation (Print)
-  Comparing the AM, FM, and PM (Presentation)
-  Comparing the AM, FM, and PM (Print)
-  Application of AM and FM (Presentation)
-  Application of AM and FM (Print)
-  Pulse Code Modulation, Amplitude Shift Keying (Presentation)
-  Pulse Code Modulation, Amplitude Shift Keying (Print)
-  Advanced Digital Modulation Techniques (Presentation)
-  Advanced Digital Modulation Techniques (Print)
-  Superheterodyne, OFDM (Presentation)
-  Superheterodyne, OFDM (Print)



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-  Sensitivity Analysis, Distributed Amplifier, MMIC (Presentation)
-  Sensitivity Analysis, Distributed Amplifier, MMIC (Print)
-  Basic Noise Equations (Presentation)
-  Basic Noise Equations (Print)
-  Sensitivity Analysis in Time Domain, Four-Quadrant Microwave Multiplier (Presentation)
-  Sensitivity Analysis in Time Domain, Four-Quadrant Microwave Multiplier (Print)
-  Fast Estimation of Main Intermodulation Products Using Volterra Series (Presentation)
-  Fast Estimation of Main Intermodulation Products Using Volterra Series (Print)
-  Expressing the MESFET and Transmission Line Delays Using Bessel Function
  
-  Topics of the Department of Radio Engineering



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## 5. Doktorandi

### Školitel:

Ing. Martin Jelínek, PhD. – obhájil disertační práci „Identifikace vlnového modelu vybraných částí arteriálního řečiště s využitím měření rychlosti šíření pulzní vlny“ v roce 2005.

Ing. Jan Míchal (externí, S3) – před obhajobou disertační práce “Multiobjective Optimization in RF Circuit Design”.

Ing. Martin Grábner (externí, TESTCOM) – po Státní doktorské zkoušce, připravuje disertační práci.

Ing. Ladislav Pospíšil (externí, Jablotron) – ve studijní fázi, před mimem.

### Školitel-specialista:

Ing. M. Gregor, PhD. – obhájil disertační práci „Vybrané funkční struktury pro aplikačně specifické integrované obvody s optickým vstupem“ v roce 2000.





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## 6. Vybrané publikace


 J. Dobeš and J. Míchal, "Accurate Sparse-Matrix Semisymbolic Analysis of Large-Scale RF Circuits," in *Proceedings of the 36th European Microwave Conference*. Piscataway: IEEE, 2006, pp. 1598–1601.

 J. Dobeš, "Efficient Procedures for Analyzing Large-scale RF Circuits," in *Proceedings of the IEEE Dallas Circuits and Systems Workshop*. Piscataway: IEEE, 2006, pp. 63–66.

 J. Dobeš and V. Žalud, *Moderní radiotechnika*, 1st ed. Praha: BEN - technická literatura, 2006, 768 pp. (Contents and preface.)

 D. Biolek, V. Biolková, and J. Dobeš, "Modeling of Switched DC-DC Converters by Mixed S-Z Description," in *Proceedings of the 2006 IEEE International Symposium on Circuits and Systems*. Piscataway: IEEE, 2006, pp. 831–834.

 J. Dobeš, "An Efficient Procedure for the Time-Domain Sensitivity Analysis," *Radioengineering*, vol. 14, no. 3, pp. 1–7, Sept. 2005.

 J. Dobeš, "A Modified Markowitz Criterion for the Fast Modes of the LU Factorization," in *MWSCAS 2005 Proceedings*, Piscataway: IEEE, 2005, pp. 955–959.





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J. Dobeš and L. Pospíšil, "Enhancing the Accuracy of Microwave Element Models by Artificial Neural Networks," *Radioengineering*, vol. 13, no. 3, pp. 7–12, September 2004.

 J. Dobeš, "Using Modified GaAs FET Model Function for the Accurate Representation of PHEMTs and Varactors," in *MELECON 2004 Proceedings*. Piscataway: IEEE, 2004, pp. 35–38.

 J. Dobeš, "Reliable CAD Analyses of CMOS Radio Frequency and Microwave Circuits Using Smoothed Gate Capacitance Models," *AEU-International Journal of Electronics and Communications*, Elsevier, vol. 57, no. 6, pp. 372–380, November 2003. (Thomson ISI IF 0.552 in 2003.)

 J. Dobeš, "Expressing the MESFET and Transmission Line Delays Using Bessel Function," in *Proceedings of the European Conference on Circuit Theory and Design 2003*, vol. 3. Monterey: IEEE Circuits and Systems Society, 2003, pp. I–169–I–172.

 J. Dobeš and J. Míchal, "Using the Variable-Length Arithmetic for an Accurate Poles-Zeros Analysis," *Radioengineering*, vol. 12, no. 3, pp. 1–5, September 2003.

 J. Dobeš, "An Accuracy Comparison of the Digital Filter Poles-Zeros Analysis With MATLAB and CIA Algorithms," *Radioengineering*, vol. 12, no. 4, pp. 1–5, December 2003.



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 J. Dobeš, "Smoothing Gate Capacitance Models for CMOS Radio Frequency and Microwave Integrated Circuits CAD," in *IMS 2002 – International Microwave Symposium Digest*, vol. 2. Piscataway: IEEE, 2002, pp. 605–608.

 J. Dobeš, "Nonstandard Sensitivity Analyses in Frequency and Time Domains," in *The 9th IEEE International Conference on Electronics, Circuits and Systems*. Piscataway: IEEE, 2002, pp. 1119–1122.

 D. Biolek, V. Biolkova, and J. Dobeš, "(Semi)symbolic Modeling of Large Linear Systems: Pending Issues," in *Proceedings of the ISSSE'01 2001 URSI International Symposium on Signals, Systems, and Electronics*. Tokyo: URSI, 2001, pp. 397–399.

 J. Dobeš, "Modeling the GaAs Nonlinear Microwave Circuits Using the CIA Program," in *1999 European Gallium Arsenide and Related III-V Compounds, Application Symposium (GAAS)*. London: Miller Freeman UK, 1999, pp. 219–224 (the PDF file is a new reprint of University of Bologna at <http://amsacta.cib.unibo.it>).

 Seznam všech publikací vytvořených na FEL po příchodu z TESLA VÚST.



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## 7. Vybrané citace

J. Dobeš and L. Pospíšil, "Enhancing the Accuracy of Microwave Element Models by Artificial Neural Networks," *Radioengineering*, vol. 13, no. 3, pp. 7–12, September 2004

cited in

N. M. Memon, M. M. Ahmed, and F. Rehman, "A Comprehensive Four Parameters I-V Model for GaAs MESFET Output Characteristics," *Solid-State Electronics*, Elsevier (in print).

D. Bielek, V. Biolková, and J. Dobeš, "(Semi)symbolic Modeling of Large Linear Systems: Pending Issues," in *Proceedings of the 2001 URSI International Symposium on Signals, Systems, and Electronics (ISSSE'01)*. Tokyo: URSI, 2001, pp. 397–399

cited in

H. Albustani, "Modelling Methods for Testability Analysis of Analog Integrated Circuits Based on Pole-Zero Analysis," *Doktor-Ingenieur Dissertation*, Der Fakultät für Ingenieurwissenschaften der Universität Duisburg-Essen, Aug. 2004.



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J. Dobeš, "CIA—A Comprehensive CAD Tool for Analog, RF, and Microwave IC's," in Proceedings of the *IEEE International Symposium on High Performance Electron Devices for Microwave and Optoelectronic Applications*, Glasgow, UK, Nov. 2000, pp. 212–217

cited in

D. Bielek, V. Biolková, and Z. Kolka, "AC Analysis of Operational Rectifiers via Conventional Circuit simulators," in Proc. of the *International Conference on Systems Theory and Scientific Computation*, Puerto De La Cruz, Tenerife, Canary Islands, Spain, Dec. 2004.

J. Dobeš, "An Accurate Poles-Zeros Analysis for Large-Scale Analog and Digital Circuits," in *IEEE International Conference on Electronics, Circuits and Systems (ICECS)*, St. Julians, Malta 2001, vol. 2, pp. 1027–1030

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D. Bielek and V. Biolková, "Secondary Root Polishing: Increasing the Accuracy of Semisymbolic Analysis of Electronic Circuits," in Proc. of the *Conference on Applied Mathematics*, Corfu, Greece, Aug. 2004.



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J. Dobeš, "User's Guide for CIA—Circuit Interactive Analyzer, Version 5.22," TESLA Communications Research Institute, Prague 1992

cited in

J. Nerad and R. C. Tozer (Dept. of Electronic & Electrical Engineering, University of Sheffield, UK), "Using Computer Pole-Zero Position Diagrams to Design Amplifiers of Maximum Gain-Bandwidth Product," *Electronic Horizon*, vol. 58, no. 1, 2001, pp. 9–13

and

J. Nerad and R. C. Tozer, "Pole-Zero Position Diagram as a New Computer Tool to Speed up High-Frequency/Maximum-Bandwidth Design," *Electronic Horizon*, vol. 58, no. 1, 2001, pp. 14–18.

J. Dobeš, "Modeling the GaAs Nonlinear Microwave Circuits Using the CIA Program," in Proceedings of the *1999 European Gallium Arsenide and Related III-V Compounds, Application Symposium (GAAS)*. London: Miller Freeman UK, 1999, pp. 219–224

reprinted in

*Alma Mater Studiorum, Universita di Bologna (AMS Acta ©)*.



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J. Dobeš, "Analyzing the Poles and Zeros for Extensive Analog and Digital Circuits," in *Radioelektronika'99*, Brno 1999, pp. 34–37

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D. Biolek and V. Biolková, "Semisymbolic Analysis of Linear Systems Using MATLAB," in Proceedings of the *8th Electrotechnical and Computer Science Conference (ERK)*, Portorose, Sep. 1999, vol. A, pp. 133–137.

J. Dobeš, *An Analysis of Multidimensional Dynamic Models of Semiconductor Structures Using CAD*, Ph.D. Thesis, 1986

cited in

M. Hátle, J. Vobecký, "A New Approach to the Simulation of Small-Signal Current Gains of PNP Structures," *IEEE Transactions on Electron Devices*, vol. 40, no. 10, Oct. 1993, pp. 1864–1866.



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## 8. Řešené projekty

*Obvody v proudovém a smíšeném módu pro zpracování analogových signálů*, Grantová agentura České republiky, 102/05/0277, 2005–2007, společný projekt VUT Brno a ČVUT Praha. (Spoluřešitel.)

*TARGET (Top Amplifier Research Groups in a European Team)*—6th Framework Programme (2004–2007). Grant Evropské komise v rámci 6. rámcového programu (NoE—Network of Excellence). Čtyřčlenný tým M. Husák, J. Foit, J. Jakovenko, J. Dobeš. (Člen týmu.)

*Nové pojetí a koordinace výuky doktorandů v radioelektronice a souvisejících oborech*, GaČr GD102/03/H086, 2003–2007. (Člen týmu.)

*Inovace laboratoří radiotechniky*, Fond rozvoje vysokých škol, tematický okruh A, 950/2006, čtyřčlenný tým J. Horevajová, Š. Matějka, K. Ulovec, J. Dobeš. (Řešitel.)

*Symbolické, semisymbolické a numerické metody analýzy, návrhu a optimalizace elektrických obvodů*, Grantová agentura České republiky, 102/01/0432, 2001–2003, společný projekt VUT Brno a ČVUT Praha. (Spoluřešitel.)





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Číslicové zpracování akustických signálů, Grantová agentura České republiky, 102/02/0156, 2002–2004. (Člen týmu.)

Grantová agentura České republiky, 102/98/1464, 1998–2000. (Člen týmu.)

ICOSYM—Information and COnference SYstem for Mechatronics, TEMPUS CME-94-CZ-100, 1994–1995. (Člen týmu.)

Grantová agentura České republiky, 102/93/2185, 1993–1995. (Člen týmu.)

Grantová agentura České republiky, 101/93/0838, 1993–1995. (Člen týmu.)

Grantová agentura České republiky, 102/93/2185, 1993–1994. (Člen týmu.)