

Curriculum vitae



Personal Data:

Name: Dipl. Ing. Dr. techn. Wolfgang Gruber
Date and Place of Birth: 09.12.1977 in Amstetten
Address: Reckentragstraße 10
A-3300 Amstetten
Citizenship: Austria
Family Status: married with Mag. Beatrix Gruber-Büchele
1 son Michael

Education:

Elementary School: Neuhofen/Ybbs (1984-1988)
Secondary School: Amstetten (1988-1996); general qualification for university entrance;

University Education:

Study of Mechatronics: *Johannes Kepler University (JKU) Linz* (1997-2004)
Project-seminar of the topic „Active RFID-Transponder“
Diploma Thesis „Vector-oriented Control of the Induction Machine with a 16-bit Fixed-point-processor“
Study of PhD: *JKU Linz* (2005-2009)
PhD Thesis „Contributions to Bearingless Segment Motors“

Military Service:

Staff Battalion 3: fully served in Amstetten (1997)

Appointments:

Traineeship:

- *Neusiedler AG* in Ulmerfeld (summer 1994 to summer 1999)
- *Siemens AG* in research-centre Erlangen in Germany (summer 2001)
- *E+E Elektronik GmbH* in Engerwitzdorf (summer 2002 as project seminar)

Freelancer:

- *Lisec Software GmbH* in Ulmerfeld (2001-2002)

Employments:

- University Assistant at *JKU Linz* (2004-2006)
- Research Assistant at *JKU Linz* in third-party funded projects, in course of this work projects at *LCM GmbH*, at *ACCM GmbH*, at *Levitronix GmbH* and at the Austrian Research Fund (*FWF*) (2006-2009).
- University Assistant with PhD at *JKU Linz* (2009-2011)
- Assistant Professor at *JKU Linz* (since Oct. 2011)

Additional Knowledge:

Languages: English
Software Packages: Windows, Office Packet, Matlab, Simulink, Maple, Maxwell, Femag, ProE, SolidWorks, C++
Typewriting
Teaching: University didactic course at *JKU* (2003)
Holding of the following courses at *JKU* (2004-2009):

- Exercises and Laboratory in *Electrical Drives*
- Exercises and Laboratory in *Power Electronics*
- Laboratory in *Electrical Circuits for Drives*

Mentoring of numerous Master and Bachelor Thesis
Driving License

Personal Awards:

VDI/VDE GMM-Literature Award 2007 (for [13] in Journals)
VDE/ETG-Literature Award 2010 (for [5] in Conference Proceedings)
OVE/OGE Price 2010 (for Ph.D. thesis)
Inter. MEC-Price 2010 (for Ph.D thesis)
JKU Stipend for Habilitation 2010

List of Publications

Books:

[1] W. Gruber, "Beiträge zum lagerlosen Segmentmotor", ACCM Schriftenreihe ‚*Advances in Mechatronics*‘ Band 2, Trauner Verlag, ISBN 978-3-85499-776-4, 2011

Patents:

[1] W. Amrhein, H. Grabner, W. Gruber, S. Silber, "Elektrische Maschine mit einem magnetisch gelagerten Reluktanzläufer", *Österreichische Patentanmeldung*, Nr. A803/2011

Journals:

- [1] W. Gruber, W. Amrhein, "Der lagerlose Segmentmotor", in *Mechatronik F & M*, 116. Jahrgang, Carl Hanser Verlag, pp. 62 - 64, Feb. 2008
- [2] W. Gruber, W. Amrhein, H. Grabner, "Regelung des lagerlosen Segmentmotors", in *at – Automatisierungstechnik*, Vol. 56, Nr. 3, Oldenbourg Wissenschaftsverlag, pp. 117-119, March 2008
- [3] P. Karutz, T. Nussbaumer, W. Gruber, J. W. Kolar, "Novel Magnetically Levitated Two-Level Motor", in *IEEE/ASME Transactions on Mechatronics*, Vol. 13, Nr. 6, pp. 658-668, Dec. 2008
- [4] F. Zürcher, T. Nussbaumer, W. Gruber, J. W. Kolar, "Comparison of 2- and 3-Phase Bearingless Slice Motor Concepts", in *JSME Journal of System Design and Dynamics (Special Issue on the ISMB 11)*, Vol. 4, Nr. 5, pp. 471-482, July 2009

- [5] W. Gruber, W. Amrhein, M. Haslmayr, "Bearingless Segment Motor With Five Stator Elements - Design and Optimization", in *IEEE Transactions on Industry Application*, Vol. 45, Nr. 4, pp. 1301-1308, Aug. 2009
- [6] W. Gruber, W. Amrhein, T. Stallinger, "Bearingless Segment Motor with Buried Magnets", in *JSME Journal of System Design and Dynamics*, Vol. 3, Nr. 5, pp. 704 - 716, Sept. 2009
- [7] P. Karutz, T. Nussbaumer, W. Gruber, J. W. Kolar, "Acceleration Performance Optimization for Motors with Large Air Gaps", in *IEEE/ASME Transactions on Mechatronics*, Vol. 57, Nr 1, pp. 52-60, Jan. 2010
- [8] H. Grabner, W. Amrhein, S. Silber, W. Gruber: "Nonlinear Feedback Control of a Bearingless Brushless DC Motor", in *IEEE/ASME Transactions on Mechatronics*, Vol. 15, Nr. 1, pp. 40-47, Feb. 2010
- [9] F. Zürcher, T. Nussbaumer, W. Gruber, J. W. Kolar, "Design and development of a 26-pole and 24-slot bearingless motor", *IEEE Transactions on Magnetics*, Vol. 45, Nr. 10, pp. 4594 - 4597, Oct. 2009
- [10] W. Gruber, T. Nussbaumer, H. Grabner, W. Amrhein, Wide Air Gap and Large-Scale Bearingless Segment Motor With Six Stator Elements", *IEEE Transactions on Magnetics*, Vol. 46, Nr. 6, pp. 2438-2441, July 2010
- [11] T. Reichert, T. Nussbaumer, W. Gruber, J. W. Kolar, "Bearingless Permanent Magnet Motor with 4/12 Slot-Pole Ratio for Bioreactor Stirring Applications", in *IEEE/ASME Transactions on Mechatronics*, Vol. 16, Nr. 3, Seite(n) 431-439, Juni 2011

Conference Proceedings:

- [1] W. Gruber, W. Amrhein, S. Silber, H. Grabner, M. Reisinger, "Theoretical Analysis of Force and Torque Calculation in Magnetic Bearing Systems with Circular Airgap" , *8th International Symposium on Magnetic Suspension Technology*, Dresden (Germany), Sept. 2005
- [2] W. Amrhein, S. Silber, W. Gruber, "Advanced Design of Electro-Magnetic Actuators", *10th International Conference on New Actuators*, Bremen (Germany), June 2006
- [3] W. Gruber, W. Amrhein, "Design of a Bearingless Segment Motor", *10th International Symposium on Magnetic Bearings*, Martigny (Switzerland), Aug. 2006
- [4] W. Gruber, W. Amrhein, M. Haslmayr, "Bearingless Segment Motor with Five Stator Elements - Design and Optimization", *International Conference on Electrical Machines and Systems*, Nagasaki (Japan), Nov. 2006
- [5] W. Gruber, W. Amrhein, "Prinzip und Regelung eines lagerlosen Segmentmotors mit eingebetteten Magneten im Rotor", *7. GMM/ETG-Fachtagung*, Augsburg (Germany), June 2007
- [6] P. Karutz, J. W. Kolar, W. Gruber, T. Nussbaumer, "The Bearingless 2-Level Motor", *7th International Conference on Power Electronics and Drive Systems*, Bangkok (Thailand), Nov. 2007
- [7] P. Karutz, T. Nussbaumer, W. Gruber, J. W. Kolar, "Saturation Effects in High Acceleration Bearingless Motors", *IEEE International Symposium on Industrial Electronics*, Cambridge (UK), June 2008
- [8] F. Zürcher, T. Nussbaumer, W. Gruber, J. W. Kolar, "Comparison of 2- and 3-Phase Bearingless Slice Motor Concepts", *11th International Symposium on Magnetic Bearings*, Nara (Japan), Aug. 2008
- [9] W. Gruber, W. Amrhein, T. Stallinger, "Bearingless Segment Motor with Buried Magnets", *11th International Symposium on Magnetic Bearings*, Nara (Japan), Aug. 2008

- [10] P. Karutz, T. Nussbaumer, W. Gruber, J. W. Kolar, "Maximizing Acceleration Capability of Magnetically Levitated Slice Motors", *18th International Conference on Electrical Machines*, Vilamoura (Portugal), Sept. 2008
- [11] T. Stallinger, W. Amrhein, W. Gruber, "Bearingless Segment Motor with Buried Magnets", *Junior Scientist Conference 2008*, Vienna, (Austria), Nov. 2008
- [12] W. Gruber, W. Amrhein, H. Grabner, "Analysis of Axial Vibrations for Bearingless Segment Motors arising from Parameter Excitation", *12th International Symposium on Transport Phenomena and Dynamics of Rotating Machinery*, Honolulu (USA), Feb. 2008
- [13] F. Zürcher, T. Nussbaumer, W. Gruber, J. W. Kolar, "Novel bearingless fractional slot motor", *IEEE International Magnetics Conference*, Sacramento (USA), May 2009
- [14] T. Stallinger, W. Gruber, W. Amrhein, "Bearingless Segment Motor with a Consequent Pole Rotor", *IEEE International Electric Machines and Drives Conference*, Miami (USA), May 2009
- [15] W. Gruber, W. Amrhein, "Lagerlose Segmentmotoren - Eine Übersicht" , ETG Fachbericht 119, VDE Verlag GmbH, pp. 29-34, , Oct. 2009
- [16] T. Reichert, J. W. Kolar, W. Gruber, T. Nussbaumer, "Design of a Novel Bearingless Permanent Magnet Motor for Bioreactor Applications" ,*35th Annual Conference on the IEEE Industrial Electronics Society*, Porto (Portugal) Nov. 2009
- [17] W. Gruber, T. Nussbaumer, H. Grabner, W. Amrhein: "Wide Air Gap and Large Scale Bearingless Segment Motor with Six Stator Elements", *11th joint MMM-INTERMAG Conference*, Washington (USA), Jan. 2010
- [18] W. Amrhein, S. Silber, W. Gruber, T. Nussbaumer, "Trends and Technical Highlights in Electromagnetic Drives", *International Conference and Exhibition on New Actuators and Drive Systems 2010*, Bremen (Germany), July 2010
- [19] D. Andessner, W. Gruber, W. Amrhein, "Fundamental Wave Analysis of the Switched Permanent Magnet Reluctance Machine" , *20th International Symposium on Power Electronics, Electrical Drives, Automation and Motion*, Pisa (Italy), July 2010
- [20] G. Bramerdorfer, G. Jungmayr, W. Amrhein, W. Gruber, E. Marth, M. Reisinger, "Bearingless Segment Motor with Halbach Magnet", *20th International Symposium on Power Electronics, Electrical Drives, Automation and Motion*, Pisa (Italy), July 2010
- [21] W. Gruber, S. Silber, W. Amrhein, T. Nussbaumer, "Design Variants of the Bearingless Slice Motor" , *20th International Symposium on Power Electronics, Electrical Drives, Automation and Motion*, Pisa (Italy), July 2010
- [22] W. Gruber, M. Huber, G. Jungmayr, W. Amrhein, "Passive Tilt Bearing Composed of Two PM Rings", *11th International Symposium on Magnetic Bearings*, Wuhan (China), Aug. 2010
- [23] H. Mitterhofer, W. Amrhein, W. Gruber, "Towards High Speed Bearingless Drives", *11th International Symposium on Magnetic Bearings*, Wuhan (China), Aug. 2010
- [24] W. Gruber, M. Huber, G. Jungmayr, W. Amrhein, "Passive tilt bearing configurations composed of permanent magnet rings", *IEEE International Magnetics Conference*, Taipei (Taiwan), April 2011
- [25] W. Gruber, J. Passenbrunner, G. Bramerdorfer, W. Amrhein, "Novel Bearingless Segment Motor Design with Axial Magnetized Rotor Magnets", *8th International Conference on Power Electronics – ECCE Asia*, Jeju (Korea), Mai 2011
- [26] J. Passenbrunner, W. Gruber, G. Bramerdorfer, W. Amrhein, "Bearingless Segment Motor with Axial Magnetized Rotor Magnets", *3rd International Youth Conference on Energetics*, Leira (Portugal), Juni 2011

- [27] W. Gruber, W. Briewasser, W. Amrhein, “Bearingless Slice Motor with Four Coils with Combined Force and Torque Generation featuring a Novel Operational Behavior”, *14th European Conference on Power Electronics and Applications*, Birmingham (UK), Aug. 2011
- [28] W. Gruber, W. Bäck, W. Amrhein, “Design and Implementation of a Wheel Hub Motor for an Electric Scooter”, *7th IEEE Vehicle Power and Propulsion Conference*, Chicago (USA), September 2011

Reviews:

- ASME Journal of Dynamic Systems, Measurement and Control
- IFAC Mechatronics
- Proceedings of the Institution of Mechanical Engineers, Part I Journal of Systems and Control Engineering
- JSME Journal of System Design and Dynamics
- IEEE Transactions on Magnetics – Conferences
- IEEE Transactions on Mechatronics
- IETE Technical Review
- ICPE 2011
- VPPC 2011