

Philips Lehrstuhl für Medizinische Informationstechnik
Helmholtz-Institut für Biomedizinische Technik
Rheinisch-Westfälische Technische Hochschule Aachen

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**Veröffentlichungsliste /
*Publications and Talks***

2011

Bücher, Buchbeiträge und Positionspapiere mit Beteiligung des Lehrstuhls 2011 / *Books, Book Chapters and White Papers*

- [1] M. Ulbrich, L. Röthlingshöfer, M. Walter and S. Leonhardt, "Analysis of body segments using bioimpedance spectroscopy and finite element method", in: O. Kanoun (ed.), Lecture Notes on Impedance Spectroscopy: Measurement, Modeling and Applications, p. 57 – 64, Volume 1, CRC Press, Boca Raton, 2011.
- [2] M. Ulbrich, J. Mühlsteff, M. Walter and S. Leonhardt, "Simulation of Continuous Spectroscopic Bioimpedance Measurements for Impedance Cardiography", in: O. Kanoun (ed.), Lecture Notes on Impedance Spectroscopy: Measurement, Modeling and Applications, p. 139 – 143, Volume 2, CRC Press, Boca Raton, 2011.
- [3] T. Wartzek, J. Mühlsteff, M. Imhoff, „Temperaturmessung: Messung und Überwachung der Körpertemperatur“, VDE Positionspapier, 2011.
- [4] Walter, M., Tappertzhofen; „Das MSP 430 Mikrocontroller Buch“; Elektor Verlag (ISBN 978-3-89576-236-9).

Patentanträge mit Beteiligung des Lehrstuhls 2011 / *Patent Applications*

- [1] R. Pikkemat, A. Cordes, M. Walter, S. Leonhardt, H.W. Plewa, K. Möhring, R. Rupp, „Verfahren und Vorrichtung zur Überwachung des Harnblasenfüllstandes eines Patienten“, Deutsche Patentanmeldung DE 10 2011 108 252.6, Anmeldedatum: 22. Juli 2011.
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**Artikel in Zeitschriften
mit anonymem Gutachterwesen /
*Papers in peer-reviewed Journals***

- [1] V. Blazek, „Biomedical Technology – 2011 and beyond“, Review, *Communications*, 1/2011, pp. 5-12, 2011.
- [2] H. Ying, M. Schlösser, A. Schnitzer, T. Schäfer, M.E. Schläfke, S. Leonhardt, and M. Schiek, „Distributed Intelligent Sensor Network for the Rehabilitation of Parkinson's Patients“, *IEEE Transactions on Information Technology in Biomedicine*. Mar;15(2): 268-76, 2011.
- [3] T. Hoffmann, B. Eilebrecht, and S. Leonhardt, „Respiratory monitoring system on the basis of capacitive textile force sensors“, *IEEE Sensors Journal*, 11(5):1112-1119, 2011.
- [4] B. Eilebrecht, T. Wartzek, J. Lem, R. Vogt, S. Leonhardt, „Kapazitives Elektrokardiogram -Messsystem im Autositz“, *Automobiltechnische Zeitschrift (ATZ)*, 113. Jahrgang, 03/2011, pp. 232-237.

Engl. Version: „Capacitive electrocardiogram measurement system in the driver seat“, *ATZ-worldwide*, Volume 113, 03/2011, pp. 50-55.
- [5] T. Wartzek, T. Lammersen, B. Eilebrecht, M. Walter, S. Leonhardt, „Triboelectricity in Capacitive Biopotential Measurements“, *IEEE Transactions on Biomedical Engineering* 2011 May;58(5):1268-77.
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- [11] M.I. Elixmann, M. Walter, C. Goffin, S. Hahne, M. Kiefer, S. Leonhardt, „Hirndruckmodellierung und Regelung einer neuen mechatronischen externen Ventrikeldrainage“; *at-Automatisierungstechnik*, Vol. 59, No. 10, pp 613-621, doi: 10.1524/auto.2011.0954.
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- [15] T. Schlebusch, “Unobtrusive Health Screening on an Intelligent Toilet Seat”, *Acta Polytechnica*, vol. 51, no. 5, pp. 94-99, 2011.
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**Konferenzbeiträge
mit Beteiligung des Lehrstuhls 2011 /
Conference Proceedings 2011**

- [1] J. Foussier, J. Caffarel, J. Te Vrugt, S. Leonhardt, "Localised Temperature Perception in Healthy Adults", 4th International Conference on Biomedical Electronics and Devices 2011 (BIOSTEC 2011), Rome, Italy, January 28th – 29th, 2011.
- [2] X. Fu, M. Walter, S. Leonhardt, "An Approach to Lower Limb Joint Motion Estimation using Inertial Measurement Unit (IMU)", 4th International Conference on Biomedical Electronics and Devices 2011 (BIOSTEC 2011), Rome, Italy, January 28th – 29th, 2011.
- [3] A. Stollenwerk, F. Göbe, M. Walter, T. Wartzek, R. Kopp, J. Arens and S. Kowalewski, "Smart Data Provisioning for Model-Based Generated Code in an Intensive Care Application", in Proc. 3rd Joint Workshop on High Confidence Medical Devices, Software, and Systems and Medical Device Plug-and-Play Interoperability (HCMDSS/MDPnP 2011), Chicago, USA, April 11th, 2011.
- [4] C. Brüser, "Unobtrusive Non-Contact Detection of Arrhythmias using a 'Smart' Bed", Poster 2011, 15th International Student Conference on Electrical Engineering, Prag, May 6; 2011.
- [5] T. Schlebusch, "Unobtrusive Health Screening on an Intelligent Toilet Seat", Poster 2011, 15th International Student Conference on Electrical Engineering, Prag, May 6; 2011.
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- [8] B. Venema, "Long-term Monitoring of Cardiac and Respiratory Activity using Optoelectronic Sensor", Poster 2011, 15th International Student Conference on Electrical Engineering, Prag; 2011;
- [9] D. Teichmann, J. Foussier, J. Jia, „Non-Contacting Measurement of Inner Thoracic Activity using Electromagnetic Coupling“, Poster 2011, 15th International Student Conference on Electrical Engineering, Prag; 2011
- [10] M. Czaplík, I. Biener, S. Leonhardt, R. Rossaint, J. Bickenbach, „Korrelation der Intravitalmikroskopie und elektrischen Impedanztomographie bei ALI“, Deutscher Anästhesiecongress 2011 (DAC 2011), Hamburg, 14. - 17. Mai 2011.

- [11] A. Cordes and S. Leonhardt, „Development of the new Multichannel Simultaneous Magnetic Induction Measurement System (MUSIMITOS 2+)”, 12th International Conference in Electrical Impedance Tomography (EIT 2011), University of Bath, 4-6 May 2011
- [12] R. Pikkemaat, B. Venema, H. Luepschen and S. Leonhardt, “High speed multi-frequency EIT device with sweep operation mode”, 12th International Conference in Electrical Impedance Tomography (EIT 2011), University of Bath, 4-6 May 2011.
- [13] K. Heimann, K. Jergus, A. K. Abbas, N. Heussen, S. Leonhardt, T. Orlikowsky, „Infra-rotthermographie zur Erfassung der Thermoregulation von Frühgeborenen“, 37. Jahrestagung der Gesellschaft für Neonatologie und Pädiatrische Intensivmedizin, Congress Center Rosengarten – Mannheim, 26. - 28. Mai 2011.
- [14] K. Jergus, K. Heimann, A. K. Abbas, N. Heussen, S. Leonhardt, T. Orlikowsky, „Hauttemperatursonde vs. Infrarotthermographie während des Kangarooings: Messen wir richtig?“ 37. Jahrestagung der Gesellschaft für Neonatologie und Pädiatrische Intensivmedizin, Congress Center Rosengarten – Mannheim, 26. - 28. Mai 2011. in: Monatsschr Kinderheilkunde 159, 2011, Suppl 2.
- [15] D. Schwaiberger, B. Lachmann, P.J. Papadakos, S. Leonhardt, “Small Positive End-Expiratory Pressure Decrease results in Dramatic PaO₂ Changes in an Experimental Model of Acute Respiratory Distress Syndrome”, American Thoracic Society International Conference (ATS 2011), Denver, CO, USA, May 13 – 18, 2011.
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- [22] N. Blanik, B. Venema, S. Aguiar Santos, S. Leonhardt; „ Long-term Vital Parameter Monitoring“, 1st IEEE EMBS Unconference on Wearable & Ubiquitous Technology for Health & Wellness, Boston, MA, USA; The Westin Hotel, 30th August 2011
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- [25] S. Schwandtner, S. Heinke, M. Brunnen, T. Sieß, S. Leonhardt, „A SIMULATION STUDY OF AN IMPELLA® 5.0 PUMP“, 19th Conference of the International Society for Rotary Blood Pumps (ISRBP), Sep. 8th – 10th, Louisville, Kentucky, USA.
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- [39] A. Stollenwerk, F. Gathmann, R. Bensberg, M. Walter, J. Arens, R. Kopp and S. Kowalewski, "A Model-Based Safety Concept for a Rotary Blood Pump", 45. Jahrestagung der Deutschen Gesellschaft für Biomedizinische Technik, Freiburg, 27.-30. Sep. 2011.
- [40] M. Ulbrich, P. Paluchowski, J. Mühlsteff. S. Leonhardt: "Erythrocyte orientation and lung conductivity analysis with a high temporal resolution FEM model for bioimpedance measurements", International Workshop on Impedance Spectroscopy, September 28-30, 2011, Chemnitz, Germany

- [41] R. Kopp, R. Bensberg, M. Walter, A. Stollenwerk, J. Arens and R. Rossaint, "Automation of extracorporeal membrane oxygenation using a combined safety and control concept", 24th Annual Congress ESICM LIVES 2011, Berlin, Germany, 1-5 October 2011. In Proc. Intensive Care Medicine, 2011, vol. 37, Springer, p. 230.
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- [43] M. D. H. Zink, C. Brüser, C. Gemein, K.-M. Lee, O. R. Rana, E. Saygili, K. Mischke, N. Marx, S. Leonhardt, P. Schauerte, "'Non-contact' screening for atrial fibrillation with Ballistocardiography", Herbsttagung der Deutschen Gesellschaft für Kardiologie 2011, 06.-08. Oktober 2011 – Düsseldorf, Germany.
- [44] M. Walter, C. Brendle, J. Arens, A. Stollenwerk, R. Kopp, R. Bensberg, S. Leonhardt, "Physiological Target Control in Long-Term extracorporeal Oxygenation", XXXVIII Annual ESAO & IV Biennial IFAO Congress, Porto, Portugal, 9.-12. October 2011.
- [45] E. Cuenca, T. Finocchiaro, A. Fritschi, S.-H. Jansen, C. Egger, S. Heinke, O. Holmannspötter, J. Spillner, R. Autschbach, S. Leonhardt, T. Schmitz-Rode, U. Steinseifer, „In-Vivo Evaluation of a hybrid Mock Circulation Loop including a Baroreflex Model”, XXXVIII Annual ESAO & IV Biennial IFAO Congress, Porto, Portugal, 9.-12. October 2011.
- [46] S. Heinke, S. Schwandtner, T. Siess, M. Walter, S. Leonhardt, „Development of an Innovative Mock Circulatory Loop for VAD Testing”, XXXVIII Annual ESAO & IV Biennial IFAO Congress, Porto, Portugal, 9.-12. October 2011.
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- [48] A. Pomprapa, D. Schwaiberger, T. Meier, B. Lachmann and S. Leonhardt, „Fuzzy Control of Tidal Volume for ARDS Patients in Closed-Loop Ventilation”, 22nd Annual Meeting of the European Society for Computing and Technology in Anaesthesia and Intensive Care (ESCTAIC 2011), Erlangen, Germany, Oct. 12th - 15th, 2011.
- [49] A. Pomprapa, D. Schwaiberger, B. Lachmann and S. Leonhardt, “ Computation and Monitoring of CO₂ Elimination for ‘Open Lung’ Recruitment”, 22nd Annual Meeting of the European Society for Computing and Technology in Anaesthesia and Intensive Care (ESCTAIC 2011), Erlangen, Germany, Oct. 12th - 15th, 2011.
- [50] S. Heinke, C. Pereira, J. Spillner, and S. Leonhardt, “Modeling the human cardiovascular system with a special focus on the heart using Dymola”, International Conference on Medical Informatics and Biomedical Engineering (ICMIBE 2011), Bali, Indonesia, October 26th - 28th, 2011.

- [51] M. Köny, M. Czaplík, M. Walter, R. Rossaint, S. Leonhardt, „A new telesupervision system integrated in an intelligent networked operating room“, 3rd International Conference on Emerging Network Intelligence (EMERGING 2011), Lisbon, Portugal, November 20-25, 2011
- [52] T. Quadflieg, T. Schlebusch, M. Ulbrich, S. Jockenhövel, S. Leonhardt, T. Gries, „Neue Werkstoffe für textile Sensoren zur Körperfunktionsüberwachung“, 10. Dresdner Sensor-Symposium, 05. - 07. Dezember 2011.

Eingeladene Vorträge 2011 / Invited Talks and Lectures 2011

- [1] S. Leonhardt, "Methods for contact-free measurement of vital signals", VCU Department of Computer Science, Fall 2011 Seminar Series, Virginia Commonwealth University, Richmond, VA, USA, 6. Sep. 2011.
- [2] S. Leonhardt, "Automatic Control in Medicine – how much is necessary, how much is wanted?", 10th International Conference on Complexity in Acute Illness (ICCAI 2011), Sep. 8th -11th, Bonn, Germany.
- [3] S. Leonhardt, „Automatische Kontrolle der Beatmung - wie viel ist gewünscht?“, 13. Hauptstadtkongress für Anästhesiologie und Intensivtherapie (HAI) mit Pflegesymposium, Internationales Congress Centrum ICC Berlin, 11. bis 13. September 2011.
- [4] S. Leonhardt, "Applications of Non-contact ECG Monitoring", Focus Session "*Unaufdringliche Überwachung*", 45. Jahrestagung der Deutschen Gesellschaft für Biomedizinische Technik, Freiburg, 27.-30. Sep. 2011.
- [5] C. Brüser, S. Leonhardt, „The Revival of Ballistocardiography: A Critical Review“, Focus Session "*Unaufdringliche Überwachung*", 45. Jahrestagung der Deutschen Gesellschaft für Biomedizinische Technik, Freiburg, 27.-30. Sep. 2011.
- [6] S. Leonhardt, "Thermographie in der Medizintechnik“, Focus Session "*Temperaturmessung*", 45. Jahrestagung der Deutschen Gesellschaft für Biomedizinische Technik, Freiburg, 27.-30. Sep. 2011.
- [7] S. Leonhardt, „New Technological Developments in Neonatology - towards the wireless incubator ...“, Annual National Congress of Pediatrics, Veldhoven, The Netherlands, 2-4 November 2011.