



Publications, Patents, Talks

2017

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

*Philips Chair for Medical Information Technology
Helmholtz-Institute for Biomedical Engineering
RWTH Aachen University*

Director:
Univ.-Prof. Dr.-Ing. Dr. med. Dr. h.c. Steffen Leonhardt

Bücher 2017 / Books 2017

Buchbeiträge mit anonymem Gutachterwesen 2017 / Peer-reviewed book chapters 2017

C.S. Pilz, J. Krajewski, V. Blazek, "On the Diffusion for Heart Rate Estimation from Videos Under Realistic Conditions"; Pattern Recognition, pp. 361-373, Springer International Publishing AG, Print ISBN: 978-3-319-66709-6, eBook ISBN: 978-3-319-66709-6, DOI: 10.1007/978-3-319-66709-6

Patentanträge und erteilte Patente mit Beteiligung des Lehrstuhls 2017 / *Granted Patents and filed Patent Applications 2017*

J. Lem, M. Mathissen, H.J. Lindner, R. Vogt, B. Eilebrecht, M. Walter, S. Leonhardt, "Sensor zur berührungslosen elektrokardiographischen Messung, Sensorarray und Sitz oder Liege", DE10 2013 216 684 B4 2017.09.28, erteilt 28.09.2017.

**Artikel in Zeitschriften
mit anonymem Gutachterwesen 2017 /
*Papers in peer-reviewed Journals 2017***

1. V. Blazek, N. Blanic, C.R. Blazek, M. Paul, C. Pereira, M. Koeny, B. Venema, S. Leonhardt, "Active and Passive Optical Imaging Modality for Unobtrusive Cardio-respiratory Monitoring and Facial Expression Assessment", **Anesth Analg**. 2017 Jan;124(1):104-119.
2. D. Rüschen, F. Prochazka, R. Amacher, L. Bergmann, S. Leonhardt, M. Walter, "Minimizing left ventricular stroke work with iterative learning flow profile control of rotary blood pumps", **Biomedical Signal Processing and Control**, 31:444-451, Jan. 2017. doi. 10.1016/j.bspc.2016.09.001.
3. C. Ngo, S. Leonhardt, T. Zhang, B. Misgeld, T. Vollmer, K. Tenbrock, S. Lehmann. "Linearity of electrical impedance tomography during maximum effort breathing and forced expiration maneuvers." **Physiological Measurement**. 2017 Jan;38(1):77-86. doi: 10.1088/1361-6579/38/1/77.
4. C. Brendle, K.-F. Hackmack, J. Kühn, M.N. Wardeh, T. Janisch, R. Kopp, R. Rossaint, A. Stollenwerk, S. Kowalewski, B. Misgeld, S. Leonhardt, M. Walter, "Continuous gas transfer monitoring during extracorporeal membrane oxygenation", **Biomedical Signal Processing and Control**, 31:321-330, January 2017, ISSN 1746-8094, <http://dx.doi.org/10.1016/j.bspc.2016.08.023>.
5. X. Long; P. Fonseca; R. Aarts; R. Haakma; J. Rolink; S. Leonhardt, „Detection of Nocturnal Slow Wave Sleep Based on Cardiorespiratory Activity in Healthy Adults”, **IEEE Journal of Biomedical and Health Informatics**, 2017 Jan;21(1):123-133. doi: 10.1109/JBHI.2015.2487446.
6. C. Hoog Antink, F. Schulz, S. Leonhardt, M. Walter, "Motion Artifact Quantification and Sensor Fusion for Unobtrusive Health Monitoring", **Sensors**, 18(1):1-19, doi: 10.3390/s18010038.
7. A. Pomprapa, S. Leonhardt, B. Misgeld, "Optimal learning control of oxygen saturation using a policy iteration algorithm and a proof-of-concept in an interconnecting three-tank system", **Control Engineering Practice**, 2017 Feb, Vol. 59, pp. 194-203. doi: <https://doi.org/10.1016/j.conengprac.2016.07.014>.
8. A. Pomprapa, S. Leonhardt, B.J.E. Misgeld, "Optimal learning control of oxygen saturation using a policy iteration algorithm and a proof-of-concept in an interconnecting three-tank system"; **Control Engineering Practice**, 59:194-203, February 2017, <http://dx.doi.org/10.2016/j.conengprac.2016.07.014>.
9. C. Brendle, K.-F. Hackmack, J. Kühn, M.N. Wardeh, T. Janisch, R. Kopp, R. Rossaint, A. Stollenwerk, S. Kowalewski, S. Leonhardt, M. Walter, B. Misgeld, "Closed-loop control of extracorporeal oxygen and carbon dioxide gas transfer", **Control Engineering Practice**, 59: 173-182, February 2017, <http://dx.doi.org/10.1016/j.conengprac.2016.09.016>.

10. C. Goffin, S. Leonhardt, K. Radermacher, „The Role of a Dynamic Craniospinal Compliance in NPH - A Review and Future Challenges”, **IEEE Reviews in Biomedical Engineering** 2017;10:310-322. doi: 10.1109/RBME.2016.2620493.
11. N. Hochhausen, I. Biener, R. Rossaint, A. Follmann, C. Bleilevens, T. Braunschweig, S. Leonhardt, M. Czaplik, „Optimizing PEEP by Electrical Impedance Tomography in a Porcine Animal Model of ARDS”, **Respiratory Care**, 2017 Mar;62(3):340-349. doi: 10.4187/respcare.05060.
12. S. Aguiar Santos, C. Castelar Wembers, K. Horst, R. Pfeifer, T. Simon, H. Pape, F. Hildebrand, M. Czaplik, S. Leonhardt, D. Teichmann, “Monitoring lung contusion in a porcine polytrauma model using EIT: an application study”, **Physiological Measurement**, 38(8):1542-1560, 2017, doi: 10.1088/1361-6579/aa7985.
13. A. Benninghaus, C. Goffin, S. Leonhardt, K. Radermacher, “Functional modelling of the craniospinal system for in-vitro parameter studies on the pathogenesis of NPH”, **Current Directions in Biomedical Engineering**, 3(2):825 – 828, 2017.
14. A. Boehm, X. Yu, S. Leonhardt, D. Teichmann, “Correction of the Unobtrusive ECG Using System Identification“, **Electronics**, 6(4):1-15, 2017, doi:10.3390/electronics6040094.
15. C. Hoog Antink, S. Leonhardt, M. Walter, “A synthesizer framework for multimodal cardiorespiratory signals”, **Biomedical Physics & Engineering Express**, 2017, 3(3):1-16, doi: 10.1088/2057-1976/aa76ee.
16. L. Korn, D. Rüschen, N. Zander, S. Leonhardt, M. Walter, “Real-Time ECG Simulation for Hybrid Mock Circulatory Loops”, **Artificial Organs**, 2017, pp. 1-10, doi: 10.1111/aor.-13000.
17. L. Leicht, B. Eilebrecht, S. Weyer, S. Leonhardt, D. Teichmann, “Closed-Loop Control of Humidification for Artifact Reduction in Capacitive ECG Measurements”, **IEEE Transactions on Biomedical Circuits and Systems**, 2017, 11(2): 300-313, doi: 10.1109/TBCAS.2016.2613097.
18. S. Leonhardt, “Smart Life Support reloaded: design and control of complex therapeutic devices”, **Biomedizinische Technik**, 2017, 62(2):109-110, doi: 10.1515/bmt-2017-0027.
19. J. Gesenhues, M. Hein, M. Ketelhut, M. Habigt, D. Rüschen, M. Mechelink, T. Albin, S. Leonhardt, T. Schmitz-Rode, R. Rossaint, D. Abel, „Benefits of Object-Oriented Model and ModeliChart: Modern Tools and Methods for the Interdisciplinary Research on Smart Biomedical Technology”, **Biomedizinische Technik**, 62(2):111-121, 2017. doi: 10.1515/bmt-2016-0074.
20. C. Brendle, T. Mülders, J. Kühn, T. Janisch, R. Kopp, R. Roissant, A. Stollenwerk, S. Kowalewski, B. Misgeld, S. Leonhardt, M. Walter, “Physiological closed-loop control of mechanical ventilation and extracorporeal membrane oxygenation”, **Biomedizinische Technik**, 62(2):199-212, 2017, doi: 10.1515/bmt-2016-0077.
21. J. Kühn, C. Brendle, A. Stollenwerk, M. Schweigler, S. Kowalewski, T. Janisch, S. Leonhardt, M. Walter, R. Kopp, “ Decentralized safety concept for closed-loop controlled in-

- tensive care”, **Biomedizinische Technik**, 62(2):213-224, 2017, doi: 10.1515/bmt-2016-0087.
22. B. Misgeld, M. Thiel, P. Schubert, S. Leonhardt, “ H^∞ -Sliding-Mode Beobachterentwurf“, **at-Automatisierungstechnik**, 2017, 65(10):695-704, doi: 10.1515/auto-2016-0016.
 23. B. Misgeld, P. G. Tenbrock, E. Dassau, F. J. Doyle III, S. Leonhardt, “Optimal online selection of type 1 diabetes-glucose metabolism models“, **Control Engineering Practice**, 2018, (71) February, pp. 108-119, doi: 10.1016/j.conengprac.2017.10.007.
 24. B. Misgeld, T. Zhang, M. Lüken, S. Leonhardt, Model-Based Estimation of Ankle Joint Stiffness“, **Sensor**, 17(4):713 – 739, 2017, doi:10.3390/s17040713.
 25. C. Ngo, S. Spagnesi, C. Munoz, S. Lehmann, T. Vollmer, B. Misgeld, S. Leonhardt, “Assessing regional lung mechanics by combining electrical impedance tomography and forced oscillation technique“, **Biomedizinische Technik**, 2017, pp. 1-9, doi: 10.1515/bmt-2016-0196.
 26. C. Ngo, K. Krüger, T. Vollmer, S. Winter, B. Penzlin, S. Lehmann, S. Leonhardt, B. Misgeld, “Effects on the Nasal Passage on Forced Oscillation Lung Function Measurements“, **Biomedizinische Technik**, 2017, 62(6):635-642, doi: 10.1515/bmt-2016-0158.
 27. L. Hewing, S. Leonhardt, B.J.E. Misgeld, “ H^∞ optimal controller design with closed-loop positive real constraints“, **J. Dyn. Sys., Meas., Control** ASME 139(9), 094502 (Jun 05, 2017). doi: 10.1115/1.4036073.
 28. A. Niesche, M. Müller, F. Ehreiser, D. Teichmann, S. Leonhardt, K. Radermacher, “Smart bioimpedance-controlled craniotomy: Concept and first experiments“, **Journal of Engineering in Medicine**, 2017, 231(7):673-680, 10.1177/0954411917700445.
 29. B. Penzlin, L. Liu, S. Leonhardt, B. Misgeld, “Measurement and Estimation Capabilities for a Class of Variable Impedance Actuators“, **International Journal of Simulation**, 2017, 18(3):1-8, doi: 10.5013/IJSSST.a.18.03.03.
 30. D. Schwaiberger, P. A. Pickerodt, A. Pomprapa, O. Tjarks, F. Kork, W. Boemke, R. C.E. Francis, S. Leonhardt, B. Lachmann, “Closed-loop mechanical ventilation for lung injury: a novel physiological-feedback mode following the principles of the open lung concept“, **Journal of Clinical Monitoring and Computing**, 2017, pp. 1-10, doi: 10.1007/s10877-017-0040-0.
 31. M. D. Zink, C. Brüser, B. Stüben, A. Napp, R. Stöhr, S. Leonhardt, N. Marx, K. Mischke, J. B. Schulz, J. Schiefer, “Unobtrusive Nocturnal Heartbeat Monitoring by a Ballistocardiography Sensor in Patients with Sleep Disordered Breathing“, **Scientific Reports**, 2017, 7(1), p 13175, doi: 10.1038/s41598-017-13138-0.

To appear:

32. L. Bergmann, D. Rüschen, R. Amacher, O. Nelles, S. Leonhardt, “Arbeitspunktabhängige Durchflussregelung einer rotatorischen Blutpumpe“, **Forschung im Ingenieurwesen**, 2018, 82(1):21-31, online first, 17. Oktober 2017, doi: 10.1007/s10010-017-0254-9.

Konferenzbeiträge mit Beteiligung des Lehrstuhls 2017 / *Conference Proceedings 2017*

SPIE BiOS, San Francisco, California, USA, January 27 – February 01, 2017

1. T. Vahlsing, S. Delbeck, J. Budde, D. Ihrig, S. Leonhardt, H.M. Heise, "Reliable glucose monitoring by ex-vivo blood micro-dialysis and infrared spectrometry for patients in critical care", SPIE BiOS, San Francisco, California, USA, January 27 – February 01, 2017

The 13th IASTED International Conference on Biomedical Engineering, Innsbruck, Austria, BioMed 2017, February, 20 – 21, 2017

2. B. Venema, S. Leonhardt, "In-Ear Pulse Oximetry in High Altitude Mountaineering", The 13th IASTED International Conference on Biomedical Engineering, Innsbruck, Austria, BioMed 2017, February, 20 – 21, 2017

VDI Mechatroniktagung 2017, March 09 – 10, 2017, Dresden, Germany

3. L. Bergmann, D. Rüschen, O. Nelles, S. Leonhardt, M. Walter, "Arbeitspunktabhängige Durchflussregelung einer rotatorischen Blutpumpe", Fachtagung Mechatronik, March 09 - 10, 2017, Dresden

Deutscher Anästhesiecongress 2017, May 03 – 05, 2017 Nürnberg, Germany

4. T. Muders, B. Hentze, S. Kreyer, H. Wrigge, S. Leonhardt, C. Putensen, "Nicht-invasive Messung des Ventilations-/Perfusionsverhältnisses auf unterschiedlichen PEEP-Stufen bei experimenteller Lungenschädigung", Deutscher Anästhesiecongress 2017, May 03 – 05, 2017 Nürnberg, Germany

IEEE 14th International Conference on Wearable and Implantable Body Sensor Networks, Eindhoven, Netherlands, BSN, May 09 -12, 2017

5. M. Lüken, X. Feng, B. Venema, B. Misgeld, S. Leonhardt, "Photoplethysmography-based In-Ear Sensor System for Identification of Increased Stress Arousal in Eyerday Life", IEEE 14th International Conference on Wearable and Implantable Body Sensor Networks (BSN 2017), Eindhoven, Netherlands, May 09 -12, 2017

POSTER 2017, May 23, 2017, Prague, CTU Prag

6. C. Hoog Antink, D. Hejj, B. Penzlin, "Spatial Analysis of Cardiorespiratory Thorax Movement with Motion Capture and Deconvolution", 21st International Student Conference on Electrical Engineering (POSTER 2017). Prague, Czech Republic, May 23, 2017
7. T. Menden, J. Orschulik, "Signal analysis of 2-belt EIT measurement patterns"; 21st International Student Conference on Electrical Engineering (POSTER 2017). Prague, Czech Republic, May 23, 2017
8. J. Orschulik, T. Menden, "Optimizing the Measurement Frequency in Electrical Impedance Tomography", 21st International Student Conference on Electrical Engineering (POSTER 2017). Prague, Czech Republic, May 23, 2017
9. D. Rüschen, M. Schrey, J. Freese, I. Heisterklaus, "Generation of True Random Numbers based on Radioactive Decay", 21st International Student Conference on Electrical Engineering (POSTER 2017). Prague, Czech Republic, May 23, 2017
10. D. U. Uguz, "Design of a Multipurpose Photoplethysmography Sensor to Assist Cardiovascular and Respiratory Diagnosis", 21st International Student Conference on Electrical Engineering (POSTER 2017). Prague, Czech Republic, May 23, 2017
11. C. Weiss, "Lacrimation Detection for Postoperative Pain Diagnostics Using Infrared Thermography", 21st International Student Conference on Electrical Engineering (POSTER 2017). Prague, Czech Republic, May 23, 2017

American Control Conference (ACC), Seattle, WA, USA, ACC, May 24 -26, 2017

12. B. Misgeld, P. Tenbrock, S. Leonhardt, "Reduced-order filtering for insulin sensitivity estimation under external disturbances", American Control Conference (ACC), Seattle, WA, USA, May 24 -26, 2017

43. Jahrestagung der Gesellschaft für Neonatologie und Pädiatrische Intensivmedizin, Dresden, Germany, GNPI, June 08 – 10, 2017

13. K. Heimann, C. Platen, P. Vetter, K. Scherer, S. Leonhardt, T. Orlikowsky, "Untersuchung der Anwendbarkeit der magnetischen Induktionsmessung zur kontaktlosen Detektion der Atemtätigkeit und Lungenbelüftung Früh- und Neugeborener – Erste Ergebnisse einer Pilotstudie", 43. Jahrestagung der Gesellschaft für Neonatologie und Pädiatrische Intensivmedizin, Dresden, Germany, GNPI, June 08 – 10, 2017

18th International Conference On Biomedical Applications of Electrical Impedance Tomography, Hanover, New Hampshire, USA, EIT 2017, June 21 – 24, 2017

14. T. Menden, J. Orschulik, S. Aguiar Santos, T. Tholen, S. Leonhardt, M. Walter, "Influence of multiplexers and cables on bio-impedance measurements", 18th International Confer-

ence on Biomedical Applications of Electrical Impedance Tomography, Hanover, New Hampshire, USA, EIT 2017, June 21 – 24, 2017

15. C. Ngo, C. Munoz, S. Leonhardt, "Combination of Electrical Impedance Tomography and Forced Oscillation Technique: a new pulmonary diagnostics tool?", 18th International Conference on Biomedical Applications of Electrical Impedance Tomography, Hanover, New Hampshire, USA, EIT 2017, June 21 – 24, 2017
16. J. Orschulik, T. Menden, S. Leonhardt, D. Teichmann, "Measurement Strategies for Heart Focused Dual Belt EIT", 18th International Conference on Biomedical Applications of Electrical Impedance Tomography, Hanover, New Hampshire, USA, EIT 2017, June 21 – 24, 2017

IEEE International Conference on Vehicular Electronics and Safety (ICVES), Vienna, Austria, June, 27 – 28, 2017

17. L. Leicht, P. Vetter, S. Leonhardt, D. Teichmann, "The PhysioBelt: A Safety Belt Integrated Sensor System for Heart Activity and Respiration", IEEE International Conference on Vehicular Electronics and Safety (ICVES), Vienna, Austria, June, 27 – 28, 2017
18. P. Vetter, L. Leicht, S. Leonhardt, D. Teichmann, "Integration of an Electromagnetic Coupled Sensor into a Driver Seat for Vital Sign Monitoring: Initial Insight", IEEE International Conference on Vehicular Electronics and Safety (ICVES), Vienna, Austria, June, 27 – 28, 2017

25th Mediterranean Conference on Control and Automation, July 03 - 06, 2017, Malta

19. A. Pomprapa, P.A. Pickerodt, W. Braun, M. Russ, M.B.T. Hofferberth, M. Walter, B. Misgeld, R.C.E. Francis, B. Lachmann, S. Leonhardt, "Automatic Artificial Ventilation Therapy Using the ARDSNet Protocol Enforcing Dynamical Constraints", 25th Mediterranean Conference on Control and Automation, July 03 - 06, 2017, Valletta, Malta.

The 20th World Congress of the International Federation of Automatic Control (IFAC), Toulouse, France, July 09 – 14, 2017

20. B. Misgeld, L. Hewing, L. Liu, S. Leonhardt, "Robust gain-scheduled control of variable stiffness actuators", The 20th World Congress of the International Federation of Automatic Control (IFAC), Toulouse, France, July 09 – 14, 2017.
21. X. Sun, J. Orschulik, J. Malmivuo, S. Leonhardt, "Separation of Cardiac- and Ventilation-related Signals within Electrical Impedance Tomography Data based on Multi-dimensional Ensemble Empirical Mode Decomposition", The 20th World Congress of the International Federation of Automatic Control (IFAC), Toulouse, France, July 09 – 14, 2017.

39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), Seogwipo, South Korea, EMBC 2017 , July, 11 – 15, 2017

22. M. Czaplik, N. Hochhausen, H. Dohmeier, C. Barbosa Pereira, R. Rossaint, "Development of a „Thermal-Associated Pain Index“ score Using Infrared-Thermography for Objective Pain Assessment“, 39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), Seogwipo, South Korea, EMBC 2017, July, 11 – 15, 2017.
23. B. Hentze, T. Muders, H. Luepschen, S. Leonhardt, C. Putensen, M. Walter, "Gamma-variate Modelling of Indicator Dilution Curves in Electrical Impedance Tomography“, 39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), Seogwipo, South Korea, EMBC 2017, July, 11 – 15, 2017.
24. C. Hoog Antink, S. Leonhardt, M. Walter, "MuSeSe – A multisensory armchair for unobtrusive vital sign estimation and motion artifact analysis“, 39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), Seogwipo, South Korea, EMBC 2017, July, 11 – 15, 2017.
25. C. Barbosa Pereira, K. Heimann, B. Venema, V. Blazek, M. Czaplik, S. Leonhardt, "Estimation of respiratory rate from thermal videos of preterm infants“, 39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), Seogwipo, South Korea, EMBC 2017, July, 11 – 15, 2017.

Joint Conference of the European Medical and Biological Engineering Conference (EMBEC) and the Nordic-Baltic Conference on Biomedical Engineering and Medical Physics (NBC), July 11 - 15, 2017, Tampere Finland

26. X. Yu, A. Boehm, W. Neu, B. Venema, N. Marx, S. Leonhardt, D. Teichmann, "A wearable 12-lead ECG T-shirt with textile electrodes for unobtrusive long-term monitoring – Evaluation of an ongoing clinical trial“, Joint European Medical and Biological Engineering Conference (EMBEC) and the Nordic-Baltic Conference on Biomedical Engineering and Medical Physics (NBC), July 11 - 15, 2017, Tampere, Finland.
27. L. Korn, D. Rüschen, S. Leonhardt, M. Walter, "Simulation of the Vectorcardiogram using a simple Volume Conductor Model“, Joint European Medical and Biological Engineering Conference (EMBEC) and the Nordic-Baltic Conference on Biomedical Engineering and Medical Physics (NBC), July 11 - 15, 2017, Tampere, Finland.
28. M. Paul, B. Venema, V. Blazek, J. Mühlsteff, S. Leonhardt, "A camera-based multispectral setup for remote vital signs assessment“, Joint European Medical and Biological Engineering Conference (EMBEC) and the Nordic-Baltic Conference on Biomedical Engineering and Medical Physics (NBC), July 11 - 15, 2017, Tampere, Finland.
29. D. Rüschen, S. Opitz, L. Korn, S. Leonhardt, M. Walter, "Robust Assistance Control of Left Ventricular Assist Devices“, Joint European Medical and Biological Engineering Conference (EMBEC) and the Nordic-Baltic Conference on Biomedical Engineering and Medical Physics (NBC), July 11 - 15, 2017, Tampere, Finland.

30. M. Walter, J. Kunczik, J. Kühn, T. Janisch, R. Kopp, S. Leonhardt, "Robust control of extracorporeal gas exchange", Joint European Medical and Biological Engineering Conference (EMBEC) and the Nordic-Baltic Conference on Biomedical Engineering and Medical Physics (NBC), July 11 - 15, 2017, Tampere, Finland.

30th European Society of Intensive Care Medicine (ESICM) Annual Congress, Vienna, Austria, September 23 – 27, 2017

31. B. Hentze, T. Muders, H. Luepschen, S. Leonhardt, C. Putensen, M. Walter, "Model-based Regional Lung Ventilation and Perfusion by Electrical Impedance Tomography", 30th European Society of Intensive Care Medicine (ESICM) Annual Congress, Vienna, Austria, September 23 – 27, 2017.
32. T. Muders, B. Hentze, S. Leonhardt, G. Hedenstierna, H. Wrigge, C. Putensen, "Regional lung perfusion measured by Electrical Impedance Tomography and Single Photon Emission Computed Tomography", 30th European Society of Intensive Care Medicine (ESICM) Annual Congress, Vienna, Austria, September 23 – 27, 2017.

Jahrestagung der Deutschen Gesellschaft für Biomedizinische Technik und Dreiländertagung der Deutschen Gesellschaft für Medizinischen Physik, Dresden, Germany, BMT 2017, September, 10 -13, 2017

33. M. Paul, C. Weiss, S. Behr, B. Venema, K. Heimann, J. Mühlsteff, T. Orlikowsky, S. Leonhardt, "Remote Sensing of vital signs in neonatology – a multispectral, camera-based approach", Jahrestagung der Deutschen Gesellschaft für Biomedizinische Technik und Dreiländertagung der Deutschen Gesellschaft für Medizinischen Physik (BMT 2017), Dresden, Germany, September, 10 -13, 2017.
34. C. Barbosa Pereira, M Czaplik, B. Venema, V. Blazek, S. Leonhardt, D. Teichmann, "Monitoring of cardiorespiratory signals using thermal imaging", Jahrestagung der Deutschen Gesellschaft für Biomedizinische Technik und Dreiländertagung der Deutschen Gesellschaft für Medizinischen Physik (BMT 2017), Dresden, Germany, September, 10 -13, 2017.

Hydrocephalus 2017, the Ninth Annual Meeting of the International Society for Hydrocephalus and CSF disorders (Hydrocephalus Society), Kobe, Japan, September 23 – 25, 2017

35. C. Castelar, A. Arslanova, S. Leonhardt, B. Misgeld, "A 3-D finite element study of a bioimpedance-based sensor to record cerebrospinal fluid pulsation", Hydrocephalus 2017, September 23 – 25, 2017, Kobe, Japan.

Computing in Cardiology (CinC 2017), Rennes, France, September 24 – 27, 2017

36. C. Hoog Antink, S. Leonhardt, M. Walter, “Fusing QRS Detection and Robust Interval Estimation with a Random Forest to Classify Atrial Fibrillation”, Computing in Cardiology (CinC 2017), Rennes, France, September 24 – 27, 2017.

IEEE International Conference on Cyborg and Bionic Systems (CBS), Beijing, China, October, 17 – 19, 2017

37. L. Liu, M. Lüken, S. Leonhardt, B. Misgeld, “EMG-driven Model-based Knee Torque Estimation on a Variable Impedance Actuator Orthosis”, IEEE International Conference on Cyborg and Bionic Systems (CBS), Beijing, China, October, 17 – 19, 2017.

13th IEEE Biomedical Circuits and Systems Conference (BioCAS 2017), Turin, Italy , October, 19 – 21, 2017

38. T. Menden, J. Orschulik, T. Tholen, S. Leonhardt, M. Walter, “Approach to Compensate Measurement Errors in Electrical Impedance Tomography“, 13th IEEE Biomedical Circuits and Systems Conference, Turin, Italy, BioCAS 2017, October, 19 – 21, 2017.

11th Asian Control Conference (ASCC 2017), Gold Coast, QLD, Australia, December 17 – 20, 2017

39. L. Ortmann, D. Shi, E. Dassau, F. J. Doyle, S. Leonhardt, B. Misgeld, “Gaussian Process-Based Model Predictive Control of Blood Glucose for Patients with Type 1 Diabetes Mellitus“, 11th Asian Control Conference (ASCC 2017), Gold Coast, QLD, Australia, December 17 – 20, 2017.

Eingeladene Vorträge 2017 / Invited Talks and Lectures 2017

- [1] S. Leonhardt, „Closed-loop Systems in Medicine“, Seminar des Institutes für Systemtheorie und Regelungstechnik, U Stuttgart, 24. Jan. 2017.
- [2] S. Leonhardt, „**Methoden zum kontakt- und kabelfreien Monitoring**“, Bremer Symposium Intensivmedizin und Intensivpflege, Bremen, 17. Feb. 2017.
- [3] S. Leonhardt, „**Kontaktlose Erfassung der Vitalparameter: Was ist möglich, was ist sinnvoll?**“, Symposium „*Inkubator der Zukunft*“, 43. Jahrestagung der Gesellschaft für Neonatologie und Pädiatrische Intensivmedizin e. V. (GNPI), Dresden, 8.-10. Juni 2017.
- [4] S. Leonhardt, „**Automatisierte Systeme für die Intensivmedizin**“, Jahrestagung des Deutschen Ethikrates, Forum B – Medizinmaschinen und Pflegeroboter, Berlin, 21. Juni 2017.
- [5] S. Leonhardt, „**Dynamic Measurement & Therapy**“, Jahrestagung der Deutschen Gesellschaft für Biomedizinische Technik und Dreiländertagung der Deutschen Gesellschaft für Medizinischen Physik, Dresden, Germany (BMT 2017), Fokussession „*NORMAL PRESSURE HYDROCEPHALUS – Model-based analysis of pathogenesis and therapy options*“, Dresden, 10. -13. Sep. 2017.
- [6] S. Leonhardt, „**On the Clinical Impact of Bioimpedance – from bench to bedside**“, International Workshop on Impedance Spectroscopy (IWIS 2017), Friday, Sep. 29th, 2017.
- [7] S. Leonhardt, „**Connected Healthcare & Industry 4.0 – towards Cyber Medical Systems**“, Dewan Seminar, Faculty of Computing, Universiti Teknologi Malaysia, Johor Bahru, Malaysia, 25. Sep. 2017.
- [8] S. Leonhardt, „**Zukunftsthemen der Medizintechnik**“, Keynote auf dem **Symposium Medizintechnik**, TU Darmstadt, 3. Nov. 2017.
- [9] S. Leonhardt, „**Meßtechnik für den Beginn und für das Ende des Lebens**“, VDI - Aachener Bezirksverein e.V., AK Qualitätsmanagement, WZL, Aachen, 30. Nov. 2017.
- [10] S. Leonhardt, „**Progress in Perfusion Imaging with EIT**“, Visit of the Czech Technical University in Prague, Faculty of Biomedical Engineering, Kladno, Czech Republic, Dec. 16th, 2017.

**Organisation von eingeladenen Zeitschriften-Ausgaben
im Jahr 2017**
***Organisation of invited special issues in peer-reviewed
journals in 2017***

- [1] Organisation des Sonderheftes "*Smart Life Support*" in der Zeitschrift **Biomedical Engineering / Biomedizinische Technik**. Editorial: S. Leonhardt, "Smart Life Support reloaded: design and control of complex therapeutic devices", *Biomedical Engineering / Biomedizinische Technik*, 2017, 62(2):109-110, doi: 10.1515/bmt-2017-0027.