# Scientific Publications of Jochen M. Rieber

*– sorted by publication type –*

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**Categories:**

Books
Journal Articles
Book Chapters
Conference Articles
Theses
Lecture Notes
Tech. Reports University
Tech. Reports Industry
Invited Talks
Conf. and Other Talks

## Books

[1] J. M. Rieber. *Control of Uncertain Systems with $\ell_1$ and Quadratic Performance Objectives*. Fortschritt-Berichte series 8, no. 1125. VDI Verlag, Düsseldorf, Germany (PhD thesis), 2007.

## Journal Articles

[6] J. M. Rieber, C. W. Scherer, and F. Allgöwer. Robust $\ell_1$ performance analysis for linear systems with parametric uncertainties. *Int. J. Control*, 85(9):851–864, 2008.

[5] W. Zhang, J. M. Rieber, and D. Gu. Optimal dead-time compensator design for stable and integrating processes with time delay. *J. Process Control*, 18(5):449–457, 2008.

[4] J. M. Rieber and F. Allgöwer. From $\mathcal{H}_\infty$ control to multiobjective control: an overview. *at - Automatisierungstechnik*, 54(9):437–449, 2006.

[3] A. Stemmer, G. Schitter, J. M. Rieber, and F. Allgöwer. Control strategies towards faster quantitative imaging in atomic force microscopy. *European J. Control*, 11(4-5):384–395, 2005.

[2] J. M. Rieber and D. G. Taylor. Integrated control system and mechanical design of a compliant two-axes mechanism. *Mechatronics*, 14(9):1069–1087, 2004.

[1] J. M. Rieber, H. Wehlan, and F. Allgöwer. The ROBORACE contest. *IEEE Control Systems Magazine*, 24(5):57–60, 2004.

## Book Chapters

[1] U. Münz, J. M. Rieber, and F. Allgöwer. Robust stabilization and $H_\infty$ control of uncertain distributed delay systems. In J. J. Loiseau, W. Michiels, S.-I. Niculescu, and R. Sipahi, editors, *Topics in Time Delay Systems – Analysis, Algorithms and Control*, number 388 in Lecture Notes in Control and Information Sciences, pages 221–231. Springer, 2009.

## Conference Articles

[17] A. Kornienko, T. Ott, J.M. Rieber, J. Levenhagen, R. T. Geshnizjani, and W. Fichter. Advanced AOCS/GNC technology demonstration using experimental testbed. In *Proc. 10th Int. ESA Conf. Guidance, Navigation, Control Systems*, Salzburg, Austria, June 2017.

[16] A. Kornienko, J. M. Rieber, T. Ott, R. T. Geshnizjani, W. Fichter, J. Forshaw, and G. Aglietti. Experimental verification of attitude control system for agile spacecraft. In *Proc. 20th IFAC Symp. Automatic Control in Aerospace*, Sherbrooke, Quebec, Canada, Aug. 2016.

[15] A. Kornienko and J. M. Rieber. Applying the dynamic inversion concept on agile spacecraft with control moment gyros. In *Proc. 9th Int. ESA Conf. Guidance, Navigation, Control Systems*, Porto, Portugal, June 2014.

[14] G. Wiedermann, W. Gockel, S. Winkler, J. M. Rieber, B. Kraft, and D. Reggio. The Sentinel-2 satellite attitude control system: challenges and solutions. In *Proc. 9th Int. ESA Conf. Guidance, Navigation, Control Systems*, Porto, Portugal, June 2014.

[13] J. M. Rieber, M. Vitelli, and S. Winkler. Spacecraft attitude and rate determination by Kalman filter-based hybridization of attitude and angular acceleration measurements. In *Proc. 1st CEAS EuroGNC Conf.*, Munich, Germany, April 2011.

[12] T. D. Krøvel, F. Dörfler, M. Berger, and J. M. Rieber. High-precision spacecraft attitude and manoeuvre control using electric propulsion. In *Proc. 60th Int. Astronautical Congress*, Daejeon, Korea, Oct. 2009.

[11] U. Münz, J. M. Rieber, and F. Allgöwer. Robust stability of distributed delay systems. In *Proc. 17th IFAC World Congress*, pages 12354–12358, Seoul, Korea, July 2008.

[10] J. M. Rieber, C. W. Scherer, and F. Allgöwer. Robust $\ell_1$ performance analysis in face of parametric uncertainties. In *Proc. 45th IEEE Conf. Decision and Control*, pages 5826–5831, San Diego, CA, USA, Dec. 2006.

[9] J. M. Rieber, C. W. Scherer, and F. Allgöwer. On complexity issues in multiobjective controller design using convex optimization. In *Proc. 5th IFAC Symp. Robust Control Design*, Toulouse, France, July 2006. On CD-ROM, paper no. 248.

[8] J. M. Rieber and F. Allgöwer. Gain-scheduling in the $\ell_1$ framework: a flight control example. In *Proc. 5th IFAC Symp. Robust Control Design*, Toulouse, France, July 2006. On CD-ROM, paper no. 250.

[7] J. M. Rieber, G. Schitter, A. Stemmer, and F. Allgöwer. Experimental application of $\ell_1$-optimal control in atomic force microscopy. In *Proc. 16th IFAC World Congress*, pages 664–669, Prague, Czech Republic, July 2005.

[6] C. Hüttner, J. M. Rieber, F. Allgöwer, and J. Hugel. Compensation of time-varying harmonic disturbances on nonlinear bearingless slice motors. In *Proc. 16th IFAC World Congress*, pages 307–312, Prague, Czech Republic, July 2005.

[5] J. M. Rieber, A. Fritsch, and F. Allgöwer. State-space formulas for gain-scheduled $\ell_1$-optimal controllers. In *Proc. 24th American Control Conf.*, pages 609–614, Portland, OR, USA, June 2005.

[4] J. M. Rieber and F. Allgöwer. An approach to gain-scheduled $\ell_1$-optimal control of linear parameter-varying systems. In *Proc. 42nd IEEE Conf. Decision and Control*, pages 6109–6114, Maui, HI, USA, Dec. 2003.

[3] J. M. Rieber and D. G. Taylor. Gain-scheduled $L_2$-gain based control of a flexible parameter-varying robot link. In *Proc. 27th Annual Conf. IEEE Industrial Electronics Society*, pages 552–557, Denver, CO, USA, Nov. 2001.

[2] J. M. Rieber and D. G. Taylor. Combined control and design of a flexible parameter-varying robot link. In *Proc. 8th Int. Conf. Advances in Communications and Control*, pages 811–822, Rethymnon, Greece, Sep. 2001.

[1] R. Köhler, J. Rieber, and M. Zeitz. Symbolic discretization of distributed parameter process models on self-adaptive moving grids. In *European Symp. Computer Aided Process Engineering 11*, pages 165–170, Kolding, Denmark, May 2001.

## Theses

[4] J. M. Rieber. *Control of Uncertain Systems with $\ell_1$ and Quadratic Performance Objectives*. PhD Thesis, Institute for Systems Theory in Engineering, University of Stuttgart, Germany, Oct. 2006.

[3] J. M. Rieber. $L_2$-gain based control of a flexible parameter-varying robot link. Diploma Thesis, Institute for Systems Theory in Engineering, University of Stuttgart, Germany, Aug. 2001.

[2] J. M. Rieber. $L_2$-gain based control of a flexible parameter-varying robot link. MS Thesis, Department of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, GA, USA, Aug. 2001.

[1] J. Rieber. Moving-Grid-Verfahren zur rechnerunterstützten Vorverarbeitung von partiellen Differentialgleichungen. Study Thesis, Institute of System Dynamics and Control Engineering, University of Stuttgart, Germany, July 2000.

## Lecture Notes

[2] J. M. Rieber. Regelungstechnik. Lecture Notes, Duale Hochschule Baden-Württemberg Ravensburg/Friedrichshafen, Germany, 2019.

[1] J. M. Rieber. Robust Control. Lecture Notes, Institute for Systems Theory and Automatic Control, University of Stuttgart, Germany, 2007.

## Technical Reports – University

[5] J. M. Rieber and F. Allgöwer. Mixed $\ell_1/\mathcal{H}_\infty$ control of MIMO systems: a linear matrix inequality approach. Technical report, Institute for Systems Theory and Automatic Control, University of Stuttgart, Germany, Feb. 2005.

[4] J. M. Rieber and T. Ley. Identifikation und Regelung eines Torsionsschwingers. Technical report, Institute for Systems Theory and Automatic Control, University of Stuttgart, Germany, April 2005.

[3] T. Meurer and J. M. Rieber. 6. IFAC-Symposium Nonlinear Control Systems in Stuttgart (NOLCOS 2004). *Automatisierungstechnik*, 53(1):44, 2005.

[2] J. M. Rieber, F. Allgöwer, and A. Stemmer. Schneller sehen durch Regelungstechnik – Moderne Bildgebung in der Nanotechnologie. In *Wechselwirkungen*, pages 100–108. University of Stuttgart, Germany, 2004.

[1] J. Rieber and T. Meurer. Nonlinear Control Systems – Anwendungen in Automobiltechnik, Raumfahrt oder bei Internettechnologien. *Stuttgarter Unikurier, University of Stuttgart, Germany*, 94(2):85–86, 2004.

## Technical Reports – Industry

[6] J. M. Rieber. HOREOS 2012: Hochgenaue Regelung von optischen Satellitensystemen. Final report, DLR research study, EADS Astrium, Friedrichshafen, Germany, 2013.

[5] J. M. Rieber. HOREOS 2011: Hochgenaue Regelung von optischen Satellitensystemen. Final report, DLR research study, EADS Astrium, Friedrichshafen, Germany, 2012.

[4] J. M. Rieber. HOREOS 2010: Hochgenaue Regelung von optischen Satellitensystemen. Final report, DLR research study, EADS Astrium, Friedrichshafen, Germany, 2011.

[3] J. M. Rieber. HOPAS 4: Hochpräzise Ausrichtung von Erdbeobachtungssatelliten. Final report, DLR research study, EADS Astrium, Friedrichshafen, Germany, 2010.

[2] J. M. Rieber. HOPAS 3: Hochpräzise Ausrichtung von Erdbeobachtungssatelliten. Final report, DLR research study, EADS Astrium, Friedrichshafen, Germany, 2009.

[1] J. M. Rieber. HOPAS 2: Hochpräzise Ausrichtung von Erdbeobachtungssatelliten. Final report, DLR research study, EADS Astrium, Friedrichshafen, Germany, 2008.

Additionally, there are an estimated more than 60 internal and project reports, which are not publicly accessible, on the topics

- Definition and analysis of satellite performance
- Modeling and linearization of satellite kinematics, dynamics, and mass properties
- Modeling of satellite equipment: reaction wheels, solar array drive mechanisms, accelerometers, electric propulsion
- Satellite sensor fusion
- Satellite attitude control with reaction wheels, control moment gyros, or thrusters
- Modeling and analysis of satellite disturbances: solar array drive jitter, reaction wheel microvibrations, propellant sloshing
- Lecture notes on robust analysis and control, attitude and orbit control systems, or presentations
- Project and research proposals

## Invited Talks

[12] J. M. Rieber. Scharfe Bilder aus dem All – Dynamik-Simulation und Lage-Regelung in der Satellitentechnik. Lecture Introduction to Simulation Technology, University of Stuttgart, Germany, Jan. 2016.

[11] J. M. Rieber. Around the world at a speed of 27000 km/h – control and estimation problems for satellites. Seminar at the Control Laboratory, Ecole Polytechnique Federale Lausanne, Switzerland, Sep. 2014.

[10] J. M. Rieber. In 100 Minuten um die Erde - Regelungs- und Schätzaufgaben in der Satellitentechnik. EI Impulse Seminar, Applied University Constance, Germany, Dec. 2013.

[9] J. M. Rieber. Around the world in 100 minutes – control and estimation problems for satellites. Colloquium in Engineering Cybernetics, University of Stuttgart, Germany, Nov. 2013.

[8] J. M. Rieber. Mit 27000 km/h um die Erde - Bahn- und Lageregelung in der Satelliten-Entwicklung. Control Engineering Seminar, ZF, Friedrichshafen, Germany, Sep. 2013.

[7] J. M. Rieber. Mit 27000 km/h um die Erde - Bahn- und Lageregelung in der Satelliten-Entwicklung. Cybernetics Alumni Seminar, University of Stuttgart, Germany, Jan. 2013.

[6] J. M. Rieber. Novel concepts for high-precision attitude control of earth observation satellites. Systems and Control Seminar, University of Magdeburg, Germany, Dec. 2009.

[5] J. M. Rieber. Control of uncertain systems: novel approaches for analysis and design. Colloquium in Engineering Cybernetics, University of Stuttgart, Germany, Nov. 2006.

[4] J. M. Rieber. Model-based control in atomic force microscopy. Systems and Control Colloquium, Delft University of Technology, The Netherlands, Nov. 2005.

[3] J. M. Rieber and F. Allgöwer. Studiengang Technische Kybernetik. Schüler-Ingenieur-Akademie, Sindelfingen, Germany, April 2004.

[2] J. M. Rieber. Die Promotion und die Tätigkeit als wissenschaftlicher Mitarbeiter nach dem Kybernetik-Studium. Cybernetics Alumni Seminar, University of Stuttgart, Germany, April 2004.

[1] J. M. Rieber. An approach to gain-scheduled $\ell_1$-optimal control of linear parameter-varying systems. Control Seminar, University of California, Santa Barbara, CA, USA, Dec. 2003.

## Conference and Other Talks

[19] J. M. Rieber. Spacecraft attitude and rate determination by kalman filter-based hybridization of attitude and angular acceleration measurements. 1st CEAS EuroGNC Conf., Munich, Germany, April 2011.

[18] J. M. Rieber. Multi-objective LPV control and uncertain matrix inequalities. 4th Stuttgart System Theory Workshop, Hirschegg, Austria, Feb. 2007.

[17] J. M. Rieber. Control of uncertain systems with $\ell_1$ and quadratic performance objectives. PhD thesis presentation, Institute for Systems Theory and Automatic Control, University of Stuttgart, Germany, Dec. 2006.

[16] J. M. Rieber. Robust $\ell_1$ performance analysis in face of parametric uncertainties. 45th IEEE Conf. Decision and Control, San Diego, CA, USA, Dec. 2006.

[15] J. M. Rieber. On complexity issues in multiobjective controller design using convex optimization. 5th IFAC Symp. Robust Control Design, Toulouse, France, July 2006.

[14] J. M. Rieber. Gain-scheduling in the $\ell_1$ framework: a flight control example. 5th IFAC Symp. Robust Control Design, Toulouse, France, July 2006.

[13] J. M. Rieber. Advances in the control of uncertain systems. 3rd Stuttgart System Theory Workshop, Hirschegg, Austria, March 2006.

[12] J. M. Rieber. $\ell_1$-optimal control: current perspective, advances and applications. Seminar on Fundamentals of Systems and Control, Delft University of Technology, The Netherlands, Sep. 2005.

[11] J. M. Rieber. Experimental application of $\ell_1$-optimal control in atomic force microscopy. 16th IFAC World Congress, Prague, Czech Republic, July 2005.

[10] J. M. Rieber. Compensation of time-varying harmonic disturbances on nonlinear bearingless slice motors. 16th IFAC World Congress, Prague, Czech Republic, July 2005.

[9] J. M. Rieber. State-space formulas for gain-scheduled $\ell_1$-optimal controllers. 24th American Control Conf., Portland, OR, USA, June 2005.

[8] J. M. Rieber. $H_\infty$ control of descriptor systems in a differential inclusion setting. 24th American Control Conf., Portland, OR, USA, June 2005.

[7] J. M. Rieber. Introduction to $\ell_1$-optimal control including new results. 2nd Stuttgart System Theory Workshop, Hirschegg, Austria, March 2005.

[6] J. M. Rieber. Wie kann die $\ell_1$-optimale Regelung zu einer erfolgreichen Regelungsmethode werden? 39th Control Engineering Colloquium, Boppard, Germany, March 2005.

[5] J. M. Rieber. Eine Methode zur $\ell_1$-optimalen Regelung von linearen parameter-veränderlichen Systemen mittels Gain-Scheduling. Joint Technical Committee of GAMM/VDI/VDE/GMA, University of Kassel, Germany, March 2004.

[4] J. M. Rieber. An approach to gain-scheduled $\ell_1$-optimal control of linear parameter-varying systems. 42nd IEEE Conf. Decision and Control, Maui, HI, USA, Dec. 2003.

[3] J. M. Rieber. $\ell_1$-optimal control and some connected problems. 1st Stuttgart System Theory Workshop, Hirschegg, Austria, March 2003.

[2] J. M. Rieber. Gain-scheduled $H_\infty$ control of a flexible robot link with varying parameters. Diploma thesis presentation, Institute for Systems Theory in Engineering, University of Stuttgart, Germany, Sep. 2001.

[1] J. M. Rieber. Moving-Grid-Verfahren zur rechnerunterstützten Vorverarbeitung von partiellen Differentialgleichungen. Semester thesis presentation, Institute of System Dynamics and Control Engineering, University of Stuttgart, Germany, July 2000.