

List of Publications

B. Demeulenaere

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Articles in International Journals Listed in ISI Web of Science

- [1] G. Pipeleers, B. Demeulenaere, J. Swevers, J. De Schutter. Robust High-Order Repetitive Control: Optimal Performance Trade-offs. *Automatica* (2006 Impact Factor: **2.273**), Accepted for publication.
- [2] B. Demeulenaere, R.S. Berkof. Improving Machine Drive Dynamics: A Structured Design Approach Towards Balancing. *ASME Journal of Mechanical Design* (2006 Impact Factor: **1.252**), In press.
- [3] G. Lenaerts, F. De Grootte, B. Demeulenaere, M. Mulier, G. Van der Perre, A. Spaepen, I. Jonkers. Subject-Specific Hip Geometry Affects Predicted Hip Joint Contact Forces During Gait. *Journal of Biomechanics* (2006 Impact Factor: **2.542**), In press.
- [4] B. Demeulenaere, P. Spaepen, S. Masselis, Ph. Cornelissen, G. Pinte, J. Hemelsoen, R. Boonen, K. Roelstraete, W. Desmet, J. Swevers, J. De Schutter. Experimental Validation of Input Torque Balancing Applied to Weaving Machinery. *ASME Journal of Mechanical Design* (2006 Impact Factor: **1.252**), Vol.130(2), no. 022307, 2008.
- [5] M. Verschuure, B. Demeulenaere, J. Swevers, J. De Schutter. Counterweight Balancing for Vibration Reduction of Elastically Mounted Machine Frames: A Second-Order Cone Programming Approach. *ASME Journal of Mechanical Design* (2006 Impact Factor: **1.252**), Vol.130(2), no. 022302, 2008.
- [6] G. Pipeleers, B. Demeulenaere, I. Jonkers, P. Spaepen, G. Van der Perre, A. Spaepen, J. Swevers, J. De Schutter. Dynamic Simulation of Human Motion: Numerically Efficient Inclusion of Muscle Physiology by Convex Optimization. *Optimization and Engineering* (2006 Impact Factor: **0.730**), Available online.
- [7] B. Demeulenaere, E. Aertbeliën, M. Verschuure, J. Swevers, J. De Schutter. Ultimate Limits for Counterweight Balancing of Crank-Rocker Four-Bar Linkages. *ASME Journal of Mechanical Design* (2006 Impact Factor: **1.252**), Vol.128(6):1272–1284, 2006.
- [8] B. Demeulenaere, J. De Schutter. Input Torque Balancing Using an Inverted Cam Mechanism. *ASME Journal of Mechanical Design* (2005 Impact Factor: **1.245**), Vol.127(5):887–900, 2005.
- [9] B. Demeulenaere, P. Spaepen, J. De Schutter. Input Torque Balancing Using a Cam-Based Centrifugal Pendulum: Design Procedure and Example. *Journal of Sound and Vibration* (2005 Impact Factor: **0.898**), Vol.283(1-2):1–20, 2005.
- [10] B. Demeulenaere, P. Spaepen, J. De Schutter. Input Torque Balancing Using a Cam-Based Centrifugal Pendulum: Design Optimization and Robustness. *Journal of Sound and Vibration* (2005 Impact Factor: **0.898**), Vol.283(1-2):21–46, 2005.
- [11] B. Demeulenaere, J. De Schutter. Synthesis of Inertially Compensated Variable-Speed Cams. *ASME Journal of Mechanical Design* (2003 Impact Factor: **0.354**), Vol.125(3):593–601, 2003.

Books as Editor

- [1] J. Swevers, J. Schoukens, R. Pintelon, P. Guillaume, J. Van Impe, I. Smets, B. Demeulenaere and B. De Moor (Eds). Book of Abstracts 26th Benelux Meeting on Systems and Control, Lommel, Belgium, March 13-15, 2007. ISBN 9789073802841, Number of pages: 280.

Ph.D. Thesis

- [1] B. Demeulenaere. Dynamic Balancing of Reciprocating Machinery with Application to Weaving Machines, Ph.D. Thesis (Advisors: J. De Schutter, J. Swevers), Katholieke Universiteit Leuven, Leuven, 2004. ISBN 90-5682-490-2, Number of pages: 430.

Full Papers in International Conference Proceedings

- [1] G. Pipeleers, B. Demeulenaere, J. Swevers, J. De Schutter. Robust High-Order Repetitive Control. *Accepted for American Control Conference*, Seattle, Washington, USA, 2008.
- [2] J. De Caigny, B. Demeulenaere, J. Swevers, J. De Schutter. Design of Dynamically Optimal Spline Motion Inputs: Experimental Results. *Accepted for American Control Conference*, Seattle, Washington, USA, 2008.
- [3] L. Van den Broeck, G. Pipeleers, J. De Caigny, B. Demeulenaere, J. De Schutter, J. Swevers. A Linear Programming Approach To Design Robust Input Shaping. *Proc. of 10th International Workshop on Advanced Motion Control*, 80–85, Trento, Italy, 2008.
- [4] J. De Caigny, B. Demeulenaere, J. Swevers, J. De Schutter. Polynomial Spline Input Design for LPV Motion Systems. *Proc. of 10th International Workshop on Advanced Motion Control*, 86–91, Trento, Italy, 2008.
- [5] J. De Caigny, B. Demeulenaere, J. Swevers, J. De Schutter. Dynamically Optimal Polynomial Splines for Flexible Servo-Systems: Experimental Results. *Proc. of 10th International Workshop on Advanced Motion Control*, 98–103, Trento, Italy, 2008.
- [6] D. Verscheure, B. Demeulenaere, J. Swevers, J. De Schutter, M. Diehl. Time-Energy Optimal Path Tracking for Robots: A Numerically Efficient Optimization Approach. *Proc. of 10th International Workshop on Advanced Motion Control*, 727–732, Trento, Italy, 2008.
- [7] G. Pipeleers, B. Demeulenaere, J. Swevers, J. De Schutter. Generalized Repetitive Control: Better Performance With Less Memory. *Proc. of 10th International Workshop on Advanced Motion Control*, 104–109, Trento, Italy, 2008.
- [8] B. Demeulenaere, J. De Caigny, J. Swevers, J. De Schutter. Dynamically Compensated and Robust Motion System Inputs Based on Splines: A Linear Programming Approach. *Proc. of the American Control Conference*, 5011–5018, New York City, USA, 2007.
- [9] G. Pipeleers, B. Demeulenaere, J. De Schutter, J. Swevers. Design of Robust Optimal Feedforward Controllers for Periodic Disturbances. *Proc. of the American Control Conference*, 5333–5340, New York City, USA, 2007.
- [10] J. De Caigny, B. Demeulenaere, J. Swevers, J. De Schutter. Optimal Design of Spline-Based Feedforward for Trajectory Tracking. *Proc. of the American Control Conference*, 4524–4529, New York City, USA, 2007.
- [11] B. Demeulenaere, P. Spaepen, S. Masselis, Ph. Cornelissen, G. Pinte, J. Hemelsoen, R. Boonen, K. Roelstraete, W. Desmet, J. Swevers, J. De Schutter. Experimental Validation of Input Torque Balancing Applied to Weaving Machinery. *Proc. of the 12th IFToMM World Congress*, Besançon, France, 2007.
- [12] M. Verschuure, B. Demeulenaere, J. Swevers, J. De Schutter. On the Benefits of Partial Shaking Force Balance in Six-Bar Linkages. *Proc. of the 12th IFToMM World Congress*, Besançon, France, 2007.
- [13] M. Verschuure, B. Demeulenaere, J. Swevers, J. De Schutter. Counterweight Balancing for Machine Frame Vibration Reduction: Design and Robustness Analysis. *Proc. of International Conference on Noise and Vibration Engineering (ISMA2006)*, 3699–3714, Leuven, Belgium, 2006.
- [14] J. De Caigny, B. Demeulenaere, J. Swevers, J. De Schutter. A Linear Programming Approach to the Optimal Design of Spline-Based Motion System Inputs. *Proc. of International Conference on Noise and Vibration Engineering (ISMA2006)*, 1287–1302, Leuven, Belgium, 2006.

- [15] G. Pipeleers, B. Demeulenaere, J. De Schutter, J. Swevers. Optimal Attenuation of Known Periodic Disturbances: a Convex Control Design Approach. *Proc. of International Conference on Noise and Vibration Engineering (ISMA2006)*, 107–118, Leuven, Belgium, 2006.
- [16] M. Verschuure, B. Demeulenaere, J. Swevers, J. De Schutter. Counterweight Balancing for Reducing Machine Frame Vibration: A Convex Optimization Framework. *Proc. of 2006 ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, Paper No. DETC2006-99167, Pennsylvania, USA, 2006.
- [17] B. Demeulenaere, J. Swevers, J. De Schutter. Ultimate and Practical Limits for Counterweight Balancing of Six-Bar Linkages. *Proc. of 2006 ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, Paper No. DETC2006-99219, Pennsylvania, USA, 2006.
- [18] K. Smolders, B. Demeulenaere, J. De Schutter, J. Swevers. Average Speed Control of Reciprocating Machinery. *Proc. of Joint 20th IEEE Int. Symp. on Intelligent Control and 13th Mediterranean Conf. on Control and Automation*, Paper No. MoA03.1, Limassol, Cyprus, 2005.
- [19] B. Demeulenaere, J. Swevers, J. De Schutter. Dynamic Balancing of Four-Bar Linkages: A Convex Optimization Framework for Efficiently Obtaining Globally Optimal Counterweights. *Proc. of 2004 ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, Paper No. DETC2004-57092, Salt Lake City, USA, 2004.
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- [21] B. Demeulenaere, J. Swevers, J. De Schutter. A Convex Optimization Framework for Dynamic Balancing of Planar Linkages. *Proc. of International Conference on Noise and Vibration Engineering (ISMA2004)*, 1997–2010, Leuven, Belgium, 2004.
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- [25] B. Koninckx, H. Van Brussel, B. Demeulenaere, J. Swevers. Closed-Loop, Fieldbus-Based Clock Synchronisation for Decentralised Motion Control Systems. *Proc. of CIRP, 1st International Conference on Agile, Reconfigurable Manufacturing*, Keynote Lecture, Michigan, USA, 2001.
- [26] B. Demeulenaere, V. Lampaert, J. Swevers, J. De Schutter. Optimal Excitation for Identification of a Cam Set-Up. *Proc. of International Conference on Noise and Vibration Engineering (ISMA2000)*, Vol.III:1209–1216, Leuven, Belgium, 2000.

Presentations/Abstracts at International Conferences

- [1] G. Pipeleers, B. Demeulenaere, J. Swevers, J. De Schutter. A Generalized Repetitive Controller Design. *Book of Abstracts of 27th Benelux Meeting on Systems and Control*, p.85, Heeze, The Netherlands, 2008.
- [2] L. Van den Broeck, G. Pipeleers, J. De Caigny, B. Demeulenaere, J. Swevers, J. De Schutter. A Linear Programming Reformulation of Input Shaping. *Book of Abstracts of 27th Benelux Meeting on Systems and Control*, p.59, Heeze, The Netherlands, 2008.

- [3] B. Demeulenaere, J. Swevers, J. De Schutter. A Semidefinite Programming Approach Towards Counterweight Balancing of Spatial Mechanisms. *Book of Abstracts of 13th Czech-French-German Conference on Optimization*, p.101, Heidelberg, Germany, 2007.
- [4] F. De Groote, G. Pipeleers, B. Demeulenaere, I. Jonkers, J. Swevers, J. De Schutter. Numerically Efficient Inclusion of Muscle Physiology in Inverse Dynamic Simulation of Human Motion. *Book of Abstracts of 13th Czech-French-German Conference on Optimization*, p.24, Heidelberg, Germany, 2007.
- [5] F. De Groote, G. Pipeleers, I. Jonkers, B. Demeulenaere, J. Swevers, J. De Schutter. Physiology Based Inverse Dynamic Analysis of Normal and Hemiparetic Gait. *Gait & Posture* (2006 Impact Factor: **1.976**), Vol.26(S):S17,2007.
- [6] F. De Groote, G. Pipeleers, B. Demeulenaere, I. Jonkers, J. Swevers, J. De Schutter. Muscle Activation Models To Predict Muscle Force During Dynamic Analysis Of Human Movement Are Equivalent. *Proc. of the XIth International Symposium on Computer Simulation in Biomechanics*, p.31, Tainan, Taiwan, 2007.
- [7] G. Pipeleers, B. Demeulenaere, J. Swevers, J. De Schutter. Design of Robust Optimal Feedback Controllers for Periodic Disturbances. *Book of Abstracts of 26th Benelux Meeting on Systems and Control*, p.115, Lommel, Belgium, 2007.
- [8] G. Pipeleers, L. Vandenberghe, B. Demeulenaere, J. Swevers, J. De Schutter. Efficient Numerical Solution Of SDPs Derived From the Generalized KYP Lemma. *Book of Abstracts of 26th Benelux Meeting on Systems and Control*, p.104, Lommel, Belgium, 2007.
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- [10] F. De Groote, G. Pipeleers, I. Jonkers, B. Demeulenaere, J. Swevers, J. De Schutter. A Physiology Based Inverse Dynamic Analysis of Musculotendon Forces During Human Movement. *Journal of Biomechanics* (2006 Impact Factor: **2.542**), Vol.39(S1):S45, 2006.
- [11] B. Demeulenaere, J. Swevers, J. De Schutter. A Convex Quadratic Programming Approach for Link Shape Optimization With Dynamic Considerations. *Book of Abstracts of 25th Benelux Meeting on Systems and Control*, p.71, Heeze, The Netherlands, 2006.
- [12] G. Pipeleers, B. Demeulenaere, J. Swevers, J. De Schutter. Optimal Attenuation of Known Periodic Disturbances: a Convex Control Design Approach. *Book of Abstracts of 25th Benelux Meeting on Systems and Control*, p.98, Heeze, The Netherlands, 2006.
- [13] F. De Groote, G. Pipeleers, B. Demeulenaere, J. Swevers, J. De Schutter. An Efficient Convex Optimization Based Approach for Including Muscle Physiology in Simulating Human Motion. *Book of Abstracts of 25th Benelux Meeting on Systems and Control*, p.68, Heeze, The Netherlands, 2006.
- [14] M. Verschuure, B. Demeulenaere, J. Swevers, J. De Schutter. A Convex Approach for Reducing Machine Vibration Through Counterweight Balancing. *Book of Abstracts of 25th Benelux Meeting on Systems and Control*, p.70, Heeze, The Netherlands, 2006.
- [15] J. De Caigny, B. Demeulenaere, J. Swevers, J. De Schutter. A Convex Optimization Framework for Designing Spline-Based Motion Trajectories. *Book of Abstracts of 25th Benelux Meeting on Systems and Control*, p.96, Heeze, The Netherlands, 2006.
- [16] B. Demeulenaere, J. Swevers, J. De Schutter. Counterweight Balancing of Mechanisms: A Semidefinite Reformulation. *SIAM Conference on Optimization*, Stockholm, Sweden, 2005.
- [17] G. Pipeleers, B. Demeulenaere, P. Spaepen, I. Jonkers, J. De Schutter, J. Swevers, A. Spaepen, G. Van der Perre. Application of Convex Optimization Techniques to Human Motion Analysis: A First Exploration. *SIAM Conference on Optimization*, Stockholm, Sweden, 2005.

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- [19] B. Demeulenaere, V. Lampaert. Optimal Excitation for Identification of a Cam Set-Up. *Book of Abstracts of 19th Benelux Meeting on Systems and Control*, p.30, Mierlo, The Netherlands, 2000.

Full Papers in National Journals

- [1] B. Demeulenaere, D. Coemelck, J. Hemelsoen, E. Aertbeliën, M. Verschuure, K. Roelstraete, J. Swevers, J. De Schutter. Optimaal Balanceren voor Weven aan Onvergelijkbare Snelheden. *Het Ingenieursblad*, Vol.77(2):23–27, Feb. 2008.

Full Papers in National Conference Proceedings

- [1] M. Verschuure, B. Demeulenaere, E. Aertbeliën, J. Swevers, J. De Schutter. A Convex Optimization Framework For Minimizing Machine Frame Vibration Through Counterweight Addition. *Proc. of 7th National Congress on Theoretical and Applied Mechanics*, [CD-ROM], Mons, Belgium, 2006.
- [2] F. De Grootte, G. Pipeleers, B. Demeulenaere, I. Jonkers, P. Spaepen. A Convex Optimization Approach To Dynamic Musculoskeletal Analysis. *Proc. of 7th National Congress on Theoretical and Applied Mechanics*, [CD-ROM], Mons, Belgium, 2006.
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