

## Andrew J. Sinclair Publications

### Journal Articles

1. A.J. Sinclair and N.G. Fitz-Coy, "Comparison of Obstacle Avoidance Strategies for Mars Landers", *Journal of Spacecraft and Rockets*, Vol. 40, No. 3, 2003, pp. 388-395.
2. J.E. Hurtado and A.J. Sinclair, "Hamel coefficients for the rotational motion of an  $N$ -dimensional rigid body", *Proceedings of the Royal Society of London Series A*, Vol. 460, No. 2052, 08 December 2004, pp. 3613-3630.
3. A.J. Sinclair and J.E. Hurtado, "Cayley kinematics and the Cayley form of dynamic equations", *Proceedings of the Royal Society of London Series A*, Vol. 461, No. 2055, 08 March 2005, pp. 761-781.
4. A.J. Sinclair and J.E. Hurtado, "Minimum-Parameter Representations of  $N$ -Dimensional Principal Rotations", *The Journal of the Astronautical Sciences*, Vol. 53, No. 3, July-September 2005, pp. 317-335.
5. A.J. Sinclair, J.E. Hurtado, and J.L. Junkins, "Application of the Cayley Form to General Spacecraft Motion", *Journal of Guidance, Control, and Dynamics*, Vol. 29, No. 2, March-April 2006, pp. 368-373.
6. A.J. Sinclair, J.E. Hurtado, and J.L. Junkins, "Linear Feedback Control Using Quasi Velocities", *Journal of Guidance, Control, and Dynamics*, Vol. 29, No. 6, November-December 2006, pp. 1309-1314.
7. A.J. Sinclair, J.E. Hurtado, and J.L. Junkins, "Nonlinearity Index of the Cayley Form", *The Journal of the Astronautical Sciences*, Vol. 53, Nos. 3 and 4, July-December 2006, pp. 619-634.
8. L.A. Weitz, J.E. Hurtado, and A.J. Sinclair, "Decentralized Cooperative-Control Design for Multivehicle Formations", *Journal of Guidance, Control, and Dynamics*, Vol. 31, No. 4, July-August 2008, pp. 970-979.
9. A.J. Sinclair, J.E. Hurtado, and J.L. Junkins, "Minimum distance and optimal transformations on  $SO(N)$ ", *Nonlinear Dynamics*, accepted for publication, available through SpringerLink Online First.
10. A.J. Sinclair, R.J. Prazenica, and D.E. Jeffcoat, "Optimal and Feedback Path Planning for Cooperative Attack", *Journal of Guidance, Control, and Dynamics*, accepted for publication.
11. J.J. Parish, J.E. Hurtado, and A.J. Sinclair, "Direct Linearization of Continuous and Hybrid Dynamical Systems", *Journal of Computational and Nonlinear Dynamics*, in review.
12. C.J. Roy and A.J. Sinclair, "On the Generation of Exact Solutions for Evaluating Numerical Schemes and Estimating Discretization Error", *Journal of Computational Physics*, in review.

13. J.N. Martin, A.J. Sinclair, and J.E. Cochran, "Comparison of Dynamic-Inversion and Linear Controllers for Flight Motion Simulation", *Mechatronics*, in review.

### Conference Papers

1. A.J. Sinclair and N.G. Fitz-Coy, "A 'Bolt-on' Obstacle Avoidance Strategy for Mars Landers", AIAA 2002-4826, AIAA/AAS Astrodynamics Specialist Conference, Monterey, California, 5-8 August 2002.
2. A.J. Sinclair, T.A. Henderson, J.E. Hurtado, and J.L. Junkins, "Development of Spacecraft Orbit Determination and Navigation Using Solar Doppler Shift", AAS 03-159, AAS/AIAA Spaceflight Mechanics Meeting, Ponce, Puerto Rico, 9-13 February 2003.
3. T.A. Henderson, T.C. Pollock, A.J. Sinclair, J.E. Theisinger, J.E. Hurtado, and J.L. Junkins, "Hardware Development and Measurements of Solar Doppler Shift for Spacecraft Orbit Determination", AAS 03-613, AAS/AIAA Astrodynamics Specialist Conference, Big Sky, Montana, 3-7 August 2003.
4. A.J. Sinclair and J.E. Hurtado, "Application of the Cayley Form to General Spacecraft Motion", AAS 04-182, AAS/AIAA Spaceflight Mechanics Meeting, Maui, Hawaii, 8-12 February 2004.
5. D.T. Griffith, A.J. Sinclair, J.D. Turner, J.E. Hurtado, and J.L. Junkins, "Automatic Generation and Integration of Equations of Motion by Operator Over-loading Techniques", AAS 04-242, AAS/AIAA Spaceflight Mechanics Meeting, Maui, Hawaii, 8-12 February 2004.
6. A.J. Sinclair and J.E. Hurtado, "Minimum-Parameter Representations of  $N$ -Dimensional Principal Rotations", 6th International Conference on Dynamics and Control of Systems and Structures in Space 2004, Riomaggiore, Italy, 18-22 July 2004.
7. A.J. Sinclair, J.E. Hurtado, and J.L. Junkins, "Investigations on the Use of the Cayley Form for Feedback Controller Design", AIAA-2004-4761, AIAA Guidance, Navigation, and Control Conference, Providence, Rhode Island, 16-19 August 2004.
8. A.J. Sinclair, J.E. Hurtado, and J.L. Junkins, "Kinematics of  $N$ -Dimensional Principal Rotations", AAS 05-133, AAS/AIAA Spaceflight Mechanics Meeting, Copper Mountain, Colorado, 23-27 January 2005.
9. A.J. Sinclair, J.E. Hurtado, and J.L. Junkins, "Nonlinearity Index of the Cayley Form", AAS 05-481, The Malcolm D. Shuster Astronautics Symposium, Buffalo, New York, 12-15 June 2005.
10. J.L. Junkins, P. Singla, J.E. Hurtado, and A.J. Sinclair, "On Coordinate Choices, Regularization, and Degree of Nonlinearity for Dynamical Systems", International Conference on Computational & Experimental Engineering and Sciences, Chennai, India, 1-6 December

2005.

11. A.J. Sinclair, J.E. Hurtado, and J.L. Junkins, "A Nonlinearity Measure for Estimation Systems", AAS 06-135, AAS/AIAA Spaceflight Mechanics Meeting, Tampa, Florida, 22-26 January 2006.
12. J.M. Jones, J.E. Hurtado, and A.J. Sinclair, "Direct Linearization of Continuous Dynamical Systems", AAS 06-104, AAS/AIAA Spaceflight Mechanics Meeting, Tampa, Florida, 22-26 January 2006.
13. A.J. Sinclair, J.E. Hurtado, and J.L. Junkins, "Linear Feedback Control Using Quasi Velocities", AIAA-2006-6423, AIAA Guidance, Navigation, and Control Conference, Keystone, Colorado, 21-24 August 2006.
14. A.J. Sinclair, R.J. Prazenica, and D.E. Jeffcoat, "Simultaneous Localization and Planning for Cooperative Air Munitions", 7th International Conference on Cooperative Control and Optimization, Gainesville, Florida, 31 January - 2 February 2007.
15. J.N. Martin, A.J. Sinclair, and J.E. Cochran, "Nonlinear Tracking of Natural Mechanical Systems for HWIL Simulations", AIAA-2007-6463, AIAA Modeling and Simulation Technology Conference, Hilton Head, South Carolina, 22-26 August 2007.
16. L.A. Weitz, J.E. Hurtado, and A.J. Sinclair, "Decentralized Cooperative-Control Design for Multi-Vehicle Formations", AIAA-2007-6587, AIAA Guidance, Navigation, and Control Conference, Hilton Head, South Carolina, 22-26 August 2007.
17. C.J. Roy and A.J. Sinclair, "On the Generation of Exact Solutions for Evaluating Numerical Schemes and Estimating Discretization Error", NATO AVT Symposium on Computational Uncertainty in Military Vehicle Design, Athens, Greece, 3-6 December 2007.
18. E.A. Doucette, A.J. Sinclair, and D.E. Jeffcoat, "Simultaneous Localization and Planning for Cooperative Air Munitions via Dynamic Programming", 8th International Conference on Cooperative Control and Optimization, Gainesville, Florida, 30 January - 1 February 2008.
19. M.P. Vautier and A.J. Sinclair, "Coordinate Switching for Accurate Simulation of Chaotic Trajectories", AAS 08-271, F. Landis Markley Astronautics Symposium, Cambridge, Maryland, 29 June - 2 July 2008.
20. J.E. Hurtado and A.J. Sinclair, "Overparameterized Systems in Astrodynamics", AAS 08-299, F. Landis Markley Astronautics Symposium, Cambridge, Maryland, 29 June - 2 July 2008.
21. R.E. Sherrill, A.J. Sinclair, and J.E. Cochran, "Scene Generation and Target Detection Development for HWIL Simulation", AIAA 2008-6367, AIAA Modeling and Simulation Technologies Conference, Honolulu, Hawaii, 18-21 August 2008.
22. J.N. Martin, A.J. Sinclair, and J.E. Cochran, "Dynamic-Inversion Control for High-Fidelity

HWIL Simulation”, AIAA 2008-6525, AIAA Modeling and Simulation Technologies Conference, Honolulu, Hawaii, 18-21 August 2008.

23. M.P. Vautier and A.J. Sinclair, “Effect of Coordinate Switching on Translunar Trajectory Simulation Accuracy”, AIAA 2008-7170, AIAA Guidance, Navigation, and Control Conference, Honolulu, Hawaii, 18-21 August 2008

### **Conference Presentations**

1. A.J. Sinclair and J.E. Hurtado, “Review of Geometric Interpretation for Motion Constants of Nonhamiltonian Dynamic Systems”, 44th Annual Technical Meeting of the Society of Engineering Science, College Station, Texas, 21-24 October 2007.