## Dr. James Rankin

Contact Information	NeuroMathComp Inria Sophia-Antipolis 2004 Route des Lucioles-BP 93, 06902 Sophia Antipolis, France	Mobile: Office: Fax: Mail 1: Mail 2: URL:	+33 (0) 76048 9981 +33 (0) 48973 2446 +33 (0) 49238 7845 james.rankin@inria.fr james.rankin@gmail.com http://www.jamesrankin.co.uk		
Current Appointment	Inria Sophia-Antipolis, NeuroMathComp				
	• <b>Postdoctoral researcher</b> Supported by the ERC-funded N	September 2010–present			
Previous Appointments	University of Bristol, Department of Engineering Mathematics				
	• Visiting fellow Septem		mber 2010–September 2011		
	• Postdoctoral researcher June 2010–September 2010 Supported by the EPSRC-funded Making it Real grant				
Education	University of Bristol, Department of Engineering Mathematics				
	• PhD — Applied Mathematic	CS	May 2010		
	<ul> <li>Thesis: Bifurcation analysis of nonlinear ground handling of aircraft</li> <li>Defended with no corrections and a faculty prize nomination</li> <li>Supervisors: Prof. Bernd Krauskopf, Dr. Mark Lowenberg, and Dr. Sanjiv Sharma (Airbus UK)</li> <li>Funded by an EPSRC CASE award grant with Airbus in the UK</li> <li>Work placements at Airbus, see Industrial Experience</li> </ul>				
	• MSc with Distinction — Industrial and Environmental Modelling September 2006				
	<ul> <li>Thesis: Crisis bifurcations in the Ikeda map</li> <li>Supervisor: Dr. Hinke Osinga</li> <li>Courses in fluid dynamics, environmental flows, asymptotics, mathematical modelling and nonlinear dynamics</li> </ul>				
	University of Bristol, Department of Mathematics				
	• BSc Hons. — Mathematics June 2005				
	- Thesis: Fractal simulation of the magnetic pendulum				
	<ul> <li>Supervisor: Prof. Holger Waalkens</li> <li>Courses in optimisation and linear programming, numerical methods, control theory, and partial differential equations</li> </ul>				
Research Interests	<ul> <li>Research focused on applications of mathematical modelling and numerical computation in the following areas:</li> <li>Numerical continuation and bifurcation theory</li> <li>Cortical modelling of visual areas</li> <li>Localised states and pattern formation</li> <li>Dynamics of motion perception and perceptual switching</li> </ul>				
Awards					
	<ul> <li>Airbus PhD Day 2009 - Second best presentation</li> <li>MATHMOD 2009 - Second best academic poster</li> <li>ECMI 2008 - Best student poster</li> </ul>				

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1. J. Rankin, A. I. Meso, G. S. Masson, O. Faugeras and P. Kornprobst, *Bifurcation study of a neural fields competition model with an application to perceptual switching in motion integration*, under review, 2013

2. A. I. Meso, J. Rankin, O. Faugeras, P. Kornprobst and G. S. Masson, *Probing the relative contribution of noise- and adaptation-driven transitions in perceptual multi-stability*, under review, 2013

3. G. Faye, J. Rankin and D.J. Lloyd, *Localized radial bumps of a neural field equation on the Euclidean plane and the Poincaré disk*, Nonlinearity, Vol. 26, pp. 437–478, 2013

4. J. Rankin, É. Tlapale, R. Veltz, O. Faugeras and P. Kornprobst, *Bifurcation analysis applied to a model of motion integration with a multistable stimulus*, Journal of Computational Neuroscience, Open Access, Vol. 34, No. 1, pp. 103–124, 2013

5. G. Faye, J. Rankin and P. Chossat, *Localized states in an unbounded neural field equation with smooth firing rate function: a multi-parameter analysis*, Journal of Mathematical Biology, Vol. 66, No. 6, pp. 1303-1338, 2013

6. J. Rankin, J. J. Walker, R. Windle, S. L. Lightman and J. R. Terry, *Characterizing dynamic interactions between ultradian glucocorticoid rhythmicity and acute stress using the phase response curve*, PloS One, Vol. 7, No. 2, 2012

7. J. Rankin, M. Desroches, B. Krauskopf and M. Lowenberg, *Canard cycles in aircraft ground dynamics*, Nonlinear Dynamics, Vol. 66, No. 4, 2011

8. J. Rankin, M. Lowenberg, B. Krauskopf and E. Coetzee, *Nonlinear analysis of lateral loading during taxiway turns*, AIAA Journal of Guidance, Dynamics and Control, Vol. 33, No. 6, 2010

9. J. Rankin, M. Lowenberg, B. Krauskopf and E. Coetzee, *Operational parameter study of aircraft ground dynamics*, ASME Journal of Computational and Nonlinear Dynamics, Vol. 5, No. 2, 2010

10. J. Rankin, E. Coetzee, B. Krauskopf and M. Lowenberg, *Bifurcation and stability analysis of aircraft turning on the ground*, AIAA Journal of Guidance, Dynamics and Control, Vol. 32, No. 2, 2009

Peer Reviewed Proceedings	H. M. Osinga and J. Rankin <i>Two-parameter locus of boundary crisis: mind the gap</i> Proceedings of The 8th AIMS international conference, 2011	s!
Invited Presentations	Persistent localised states in neural fields, Seminar in the Centre for Systems, Dy namics and Control, University of Exeter, UK 29 October 201	y- 12
	Persistent localised states in a model of working memory, Talk in the mini-symposiu Localised multi-dimensional states at Dynamics Days conference, Gothenburg, Swe den 7 September 201	т е- 12
	Neural fields models of motion perception, Seminar in the Computational Neural science Group, Universitat Pompeu Fabra, Barcelona 23 July 201	0- 12
	Dynamics of motion integration for a multistable input, Talk at the GDR-Visio Annual Meeting, Institut de Neurosciences de la Timone, Marseille	m

 $2 \ {\rm December} \ 2011$ 

Bifurcation analysis of a neural fields model of motion perception, Seminar at the Center for Neural Science, New York University 19 May 2011

Multistability and bifurcations in a model of motion perception, Poster at the New Developments in Dynamical Systems Arising from the Biosciences Workshop, Mathematical Biosciences Institute, Columbus, OH 24 March 2011

Phase resetting in a model of a neuroendocrine system with delays, Seminar at Neuromathcomp, Inria Sophia-Antipolis, France 21 May 2010

Nonlinear analysis of lateral loading during ground manoeuvres, Talk at the 2<sup>nd</sup> Airbus International PhD Day, Bristol, UK Awarded prize for Second Best Presentation 22 October 2009

Operational parameter study of aircraft ground dynamics, Paper presented and talk in the mini-symposium Computational Methods for Nonlinear Dynamics Analysis at ASME IDETC 2009, San Diego, CA 1 September 2009

Lateral load of landing gears during stable turns, Talk in the mini-symposium Nonlinear Dynamics in Engineering Applications at SIAM Dynamical Systems Conference, Snowbird, Salt Lake City, UT 18 May 2009

Nonlinear dynamics of aircraft ground handling, Paper presented and talk in the mini-symposium Dynamical Systems Methods in Aerospace Engineering at The European Consortium for Mathematics in Industry 2008, University College London, London, UK 30 June 2008

Contributed Talks and Posters	Motion direction integration following the onset of multistable stin erties explain dynamic shifts in the dominant perceived direction, pean Conference on Visual Perception, Alghero, Italy	nuli: stability prop- Talk at the Euro- 3 September 2012
	Perceptual transition dynamics of a multi-stable visual motion s the Visual Sciences Society Annual Meeting, Naples, FL	stimulus, Poster at 13 May 2012
	Switching behaviour in motion perception, Talk at Progress in Net Centre for Integrative Neuroscience and Neurodynamics, University	eural Field Theory, ity of Reading, UK 20 April 2012
	Illusory persistent states in a model of visual motion perception, conference on Applications of Dynamical Systems, Snowbird, UT	Talk at the SIAM
		23 May 2011
	Multistability and bifurcations in a model of motion perception, Permatical Neuroscience Workshop, Internation Centre for Mathema inburgh, UK	oster at the Mathe- tical Sciences, Ed- 12 April 2011
	Canard cycles of an aircraft turning on the ground, Talk at the Congress of Theoretical and Applied Mechanics, Penn State Univ	16th US National versity, PA 1 July 2010
	Nonlinear analysis of lateral loading during ground manoeuvres, Patalk at the AIAA Modelling and Simulation Technologies Confe Place, Chicago, IL	aper presented and erence, McCormick 12 August 2009

	Nonlinear modelling and analysis of aircraft ground dynamics, Paper presented an poster at MATHMOD 2009, Vienna University of Technology, Vienna, Austria Awarded prize for Second Best Academic Poster 12 February 200	ıd 09	
	Nonlinear ground dynamics of aircraft: bifurcation analysis of turning solution Paper presented at the AIAA Modelling and Simulation Technologies Conference Hawaii Convention Centre, Honolulu, HA 19 August 200	ıs, ce, 08	
	Bifurcation and stability analysis of aircraft turning, Poster presented at The E ropean Consortium for Mathematics in Industry 2008, University College Londo UK	u- n,	
	Awarded prize for Best Student Poster 30 June 200	08	
	Nonlinear ground handling of aircraft, Talk at British Applied Mathematics Coll quium, University of Manchester, Manchester, UK 10 April 200	.0- 08	
Mini-symposium Organisation	Cortical spatiotemporal patterns: modeling and applications, Mini-symposium corganised with Gregory Faye at SIAM conference on Applications of Dynamic Systems, Snowbird, UT 23 May 202	o- al 13	
	<ul> <li>Nonlinear dynamics in engineering, Mini-symposium co-organised with Dave Baton at the SIAM meeting on Emerging Topics in Dynamical Systems and Partie Differential Equations, Barcelona, Spain 3 June 2010</li> <li>Talk given: Slow-fast dynamics of an aircraft turning on the ground</li> </ul>	ır- .al 10	
INDUSTRIAL	Airbus in the UK, Airbus Filton Site		
EXPERIENCE	Landing Gear Group		
	<ul><li>Introduction to working in the aerospace industry</li><li>Built relationships to facilitate collaboration throughout the PhD project</li></ul>		
	October 2006–December 200	06	
	Future Projects Group		
	<ul> <li>Demonstrated the effectiveness of new methods developed during the Ph through their application to current design challenges</li> <li>Gained experience in presenting academic research to an industrial audience</li> </ul>	D	
	• Disseminated findings to several groups working in collaboration through or presentations and a written report	al	
	January 2009–March 200	09	
TRAINING	Centre International de Rencontres Mathematiques (CIRM), Marseille,		
COURSES	• Dynamical systems in the presence of symmetry in the biological context Course given by Pascal Chossat November 14–18, 202	11	
	Neural field modelling Course given by Steve Coombes     November 2–4, 202	11	
	Instituto Universitario de Investigación de Matemáticas, Universidad de Sevilla,		
	• Advanced school on mathematical modelling June 22-26, 200	09	
TEACHING	University of Bristol, Department of Engineering Mathematics		
EXPERIENCE	Taught various tutorials, example classes and computer labs: • Engineering Mathematics tutorials		
Training courses Teaching Experience	<ul> <li>Centre International de Rencontres Mathmatiques (CIRM), Marseille,</li> <li>Dynamical systems in the presence of symmetry in the biological context Course given by Pascal Chossat November 14–18, 201</li> <li>Neural field modelling Course given by Steve Coombes November 2–4, 201</li> <li>Instituto Universitario de Investigación de Matemáticas, Universidad de Sevilla,</li> <li>Advanced school on mathematical modelling June 22-26, 200</li> <li>University of Bristol, Department of Engineering Mathematics Taught various tutorials, example classes and computer labs:</li> <li>Engineering Mathematics tutorials</li> </ul>	1 1 0	

	<ul><li>Mathem</li><li>Data and</li><li>Mathem</li></ul>	atics with Maple (con alysis with Matlab (c atical and Data Mod	nputer labs) omputer labs) elling (computer labs)			
		January 2007–December 2009				
	Supervised Dynamics	sed student group project on mathematical modelling: Ground Vehicle $cs$				
	September 2009–December 2009					
	Co-supervised an ERASMUS student's Aeronautical Engineering final-year pro- ject: Nonlinear ground dynamics of aircraft: bifurcation and stability analyis January 2008–July 2008					
	Co-supervised Aeronatuical Engineering final-year project: Bifurcation and sta-					
	bility analysis of aircraft ground manoeuvres October 2007–March 2008					
Languages and Computer Skills	English: French: Spanish: Welsh:		native speaker fluent working knowledge working knowledge			
	Programming Scientific softwork Numerical con	languages: vare: ntinuation packages:	C/C++, Fortran Matlab, Maple AUTO07p, Trilinos, Matcont, CL_Matcont			
Personal Information	Full name: Date of birth: Nationality:	Andrew James Ran 5th June 1984 British	kin			