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Anders Ekberg

27th March 2014

Degrees, education and positions

Degrees

2005 Degree of Docent in Applied Mechanics 2005–08–26 (Faculty appointed examiner was Professor Stefano Beretta, Politecnico di Milano)

2000 Degree of PhD in Solid Mechanics 2000–04–07 (60 credit points in courses, PhD-thesis and public defence with faculty appointed opponent, Professor Michael Brown, University of Sheffield and the grading committee: Professor Niels Ottosen, LTH, Dr Nicolae Pasca, Kockums and Professor Hans Petersson, Chalmers)

1997 Degree of Licentiate of Engineering in Solid Mechanics 1997–02–18 (40 credit points in courses, licentiate thesis and licentiate seminar with discussion leader Dr Erland Yhland of SKF)

1992 MSc in Civil Engineering

Education

1994–2000
PhD-studies at the Department of Solid Mechanics, Chalmers, Göteborg Supervisor: Associate Professor Roger Lundén, Examiner: Professor Bengt Åkesson

1987–1992
University studies at the School of Civil Engineering, Chalmers, Göteborg

Awards

- 2011 SAGE Best Paper Award
- The T A Stewart–Dyer prize / Frederick Harvey Trevithick prize for best paper 2009
- The William Alexander Agnew Meritorious / Clarence Noel Goodall Award for best paper 2005
- 9th World Congress on Railway Research best paper award in the category "An even more competitive and cost efficient railway" 2011
- Best paper award at the International Heavy Haul Association Specialist Technical Session (IHHA2007)

Teaching and supervisory work

Please refer to the *Portfolio of pedagogical qualifications.*

Positions

2013 Professor in Solid Mechanics, at Chalmers University of Technology, Department of Applied Mechanics (www.chalmers.se/am)

2010–2013
Docent at Chalmers University of Technology, Department of Applied Mechanics

2005– Employed at Chalmers Industriteknik

2004–2005
Researcher (forskare) at the Department of Applied Mechanics, Chalmers, Göteborg

2000–2004
Assistant Professor (forskarassistent) at the Department of Solid Mechanics (from 2002 Department of Applied Mechanics), Chalmers, Göteborg

1992–1994
Civil engineer (bantekniker) at the Swedish National Rail Administration in Nässjö. The work included

- Contracting and supervision of construction works for high speed upgrading of the Stockholm–Malmö line

– Contracting and supervision of a renovation of the main production building in the district as well as station rebuildings *etc*
– Implementation of the quality assurance standard (ISO 9000)

1992 Temporary work at the Department of Structural Mechanics, School of Civil Engineering, Chalmers, Göteborg

–1992 Work at holidays at NCC (surveying and ground work), SAAB (metal forming) and GP (distribution)

Selected work tasks and academic services

2013 Deputy member of grading committee for the degree of PhD – Mustafa Aygül, **Fatigue evaluation of welded details – using the finite element method**, Department of Civil and Environmental Engineering, Chalmers University of Technology, Sweden

2013 Member of grading committee for the degree of PhD – Yi Zhu, **Adhesion in the wheel–rail contact**, Department of Machine Design Royal Institute of Technology, Stockholm, Sweden

2013 Member of grading committee for the degree of PhD – Zhiyuan Li, **Fatigue assessment of container ships – a contribution to direct calculation procedures**, Department of Shipping and Marine Technology, Chalmers University of Technology, Sweden

2013 Member of grading committee for the degree of PhD – Iman Arasteh Khouy, **Cost-effective maintenance of railway track geometry – a shift from safety limits to maintenance limits**, Department of Operation and Maintenance Engineering, Luleå University of Technology, Sweden

2013 External examiner of Sagheer Abbas Ranjha, **The effect of head wear on rail underhead radius stresses and fracture under high axle load conditions**, Faculty of Engineering and Industrial Sciences, Swinburne University of Technology, Australia

2012 External examiner of Gordana Vasic, **Modelling of wear and crack initiation in rails**, University of Newcastle, UK

2012 Invited keynote speaker at the 9th International Conference on Contact Mechanics and Wear of Rail/Wheel Systems CM2012

2012 Member (Adviseur) of the Doctoral Examination Committee of Xin Zhao, **Dynamic Wheel/Rail Rolling Contact at Singular Defects with Application to Squats**, TU Delft, The Netherlands

2012 Co-opponent for the degree of PhD – M Gabriella Tarantino, **Shear-mode propagation of short cracks under rolling contact fatigue**, Department of Mechanical Engineering, Politecnico di Milano, Italy

2011– Scientific and technical coordinator of the EC funded Integrated Project D-RAIL (`d-rail-project.eu`).

2011 Deputy member of the grading committee for the degree of PhD – Kamellia Dalaei, **The influence of residual stresses on constant and variable amplitude fatigue behaviour of steel**, Department of Materials and Manufacturing Technology, Chalmers, Sweden

2011 Discussion leader at seminar for the degree of Licentiate of Engineering – Dave Hannes, **Modelling of surface initiated rolling contact fatigue crack growth using the asperity point load mechanism**, Department of Solid Mechanics, KTH, Sweden

2010 Member of the International Scientific Panel of the UK research program Track21

2010 Guest editor of the scientific journal *Proc IMechE Journal of Rail and Rapid Transit* for a special issue on INNOTRACK research (vol 244, no 4)

2010– Responsible for national implementation of research findings and innovative solutions from the EC funded Integrated Project INNOTRACK (`www.innotrack.eu`) at Banverket / Trafikverket.

2009– Coordinating Europe-wide implementation of results from the EC funded Integrated Project INNOTRACK (`www.innotrack.eu`)

2009– Project leader for the Swedish Research Council project: **Computational modeling of thermomechanical coupling for contacting bodies in (high speed) relative motion** (also included in CHARMEC as project MU25: **Thermodynamically coupled contact between wheel and rail**)

2009– Member of the Editorial Board of Ingegneria Ferroviaria

2008 Coordinator of the "road show" where all CHARMEC's industrial partners and Banverket where visited as a preparation for the (successful) new three-year contract of the centre.

2008 Member of the grading committee for the degree of PhD – Ulf Karlsson, **Structural integrity analysis of critical elements of RoPax ships**, Department of Shipping and Marine Technology, Chalmers, Sweden

2007– Project leader for CHARMEC project MU21: **Thermal impact on RCF of wheels**

2007– Project leader for CHARMEC project MU22: **Improved criterion for surface initiated RCF**

2007 Member of the grading committee for the degree of PhD – Elias Kassa, **Dynamic train–track interaction – mathematical modelling, numerical simulations and field testing**, Department of Applied Mechanics, Chalmers, Sweden

2007 Parental leave (April–September)

2006–2011 Project leader for CHARMEC project MU18: **Wheels and rails at high speeds and axleloads**

2006–2010 Scientific and technical coordinator of the EC funded Integrated Project INNOTRACK (`www.innotrack.eu`).

2006–2010 Member of the Board of CIT Thermoflow AB

2006 Member of the grading committee for the degree of PhD – Per Heintz, **Finite Element procedures for the numerical simulation of crack propagation and bilateral contact**, Department of Applied Mechanics, Chalmers, Sweden

2005–2006 Leader for the pole "Infrastructure and signaling" within the European rail research Network of Excellence EURNEX.

2005 Coordinating the first stages of compilation of technical descriptions for the EU project proposal INNOTRACK. Responsible for Sweden's contributions in subprojects "Track" and "Switches & Crossings"

2004– Responsibility / involvement in a number of investigations of mechanical failures *etc.*

2004 Guest editor of a special issue of the International Journal *Wear* focusing on CM2003 (vol 258, no 7–8)

2004 International reviewer of proposal for national research programs in Italy

2003 Member of the organizing committee and active in the organization of the International Conference Contact Mechanics and Wear of Rail/Wheel Systems (CM2003) at Chalmers in June 2003

2001 Discussion leader at seminar for the degree of Licentiate of Engineering – Sara Lorén, **Estimating fatigue limits and inclusion sizes using staircase tests and finite lives**, Department of Mathematical Statistics, Chalmers, Sweden

2000– Member of the management team of the Centre of Excellence CHARMEC (`www.charmec.chalmers.se`) including external presentations, board meetings, administrative tasks, *etc*

2000 International reviewer of proposal for national research programs in Italy

Publications

Refereed papers

[1] Anders Ekberg, Hans Bjarnehed & Roger Lundén, **A fatigue life model for general rolling contact with application to wheel/rail damage**, *Fatigue & Fracture of Engineering Materials & Structures*, vol 18, no 10, pp 1189–1199, 1995

[2] Anders Ekberg, **Rolling contact fatigue of railway wheels – a parametric study**, *Wear*, vol 211, no 2, pp 280–288, 1997

[3] Anders Ekberg & Johan Marais, **Effects of imperfections on fatigue initiation in railway wheels**, *IMechE Journal of Rail and Rapid Transit*, vol 214, no F1, pp 45–54, 2000

[4] Anders Ekberg & Peter Sotkovszki, **Anisotropy and rolling contact fatigue of railway wheels**, *International Journal of Fatigue*, vol 23, no 1, pp 29–43, 2001

[5] Elena Kabo & Anders Ekberg, **Fatigue initiation in railway wheels – a numerical study of the influence of defects**, *Wear*, vol 253, no 1–2, pp 26–34, 2002

[6] Anders Ekberg, Elena Kabo & Hans Andersson, **An engineering model for rolling contact fatigue**, *Fatigue & Fracture of Engineering Materials & Structures*, vol 25, no 10, pp 899–909, 2002

[7] Anders Ekberg, Elena Kabo & Hans Andersson, **Answer to the letter to the editor by M Ciavarella and H Maitournam**, *Fatigue & Fracture of Engineering Materials & Structures*, vol 27 no 6, pp 527–528, 2004

[8] Anders Ekberg, **Fretting fatigue of railway axles – a review of predictive methods and outline of a finite element model**, *IMechE Journal of Rail and Rapid Transit*, vol 218, pp 299–316, 2004

[9] Anders Ekberg, Jonas Ringsberg & Roger Lundén, **Guest editorial**, *Wear*, vol 258 no 7–8, pp 953–954, 2005

[10] Elena Kabo & Anders Ekberg, **Material defects in rolling contact fatigue of railway wheels – the influence of defect size**, *Wear*, vol 258 no 7–8, pp 1194–1200, 2005

[11] Anders Ekberg & Elena Kabo, **Fatigue of railway wheels and rails under rolling contact and thermal loading – an overview**, *Wear*, vol 258 no 7–8, pp 1288–1300, 2005

[12] Jens C O Nielsen, Anders Ekberg & Roger Lundén, **Influence of short-pitch wheel/rail corrugation on rolling contact fatigue of railway wheels**, *IMechE Journal of Rail and Rapid Transit*, vol 219, no F3, pp 177–187, 2005.
Awarded the William Alexander Agnew Meritorious / Clarence Noel Goodall Award.

[13] Elena Kabo, Jens Nielsen & Anders Ekberg, **Prediction of dynamic train–track interaction and subsequent material deterioration in the presence of insulated rail joints**, *Vehicle System Dynamics*, vol 44, no S1, pp 718 – 729, 2006

[14] Eka Lansler, Anders Ekberg, Elena Kabo & Hans Andersson, **Influence of plastic deformations on growth of subsurface rolling contact fatigue cracks in railway wheels**, *IMechE Journal of Rail and Rapid Transit*, vol 220, n 4, pp 461-473, 2006

[15] Anders Ekberg, Elena Kabo, Jens C O Nielsen & Roger Lundén, **Subsurface initiated rolling contact fatigue of railway wheels as generated by rail corrugation**, *International Journal of Solids and Structures*, vol 44, pp 7975–7987, 2007

[16] Robert Fröhling, Anders Ekberg & Elena Kabo, **The detrimental effects of hollow wear – field experiences and numerical simulations**, *Wear*, vol 265, no 9–10, pp 1283-1291, 2008

[17] Johan Sandström & Anders Ekberg, **Predicting crack growth and risks of rail breaks due to wheel flat impacts in heavy haul operations**, *IMechE Journal of Rail and Rapid Transit*, vol 223, no 2, pp 153–161, 2009

[18] Andrea Gianni, Andrea Ghidini, Tord Karlsson & Anders Ekberg, **Bainitic steel grade for solid wheels: metallurgical, mechanical, and in-service testing**, *IMechE Journal of Rail and Rapid Transit*, vol 223, no 2, pp 163-171, 2009
Awarded the T A Stewart–Dyer prize / Frederick Harvey Trevithick prize.

[19] Johan Sandström & Anders Ekberg, **A numerical study of the mechanical deterioration of insulated rail joints**, *IMechE Journal of Rail and Rapid Transit*, vol 223, no 3, pp 265–273, 2009

[20] Tore Vernersson, Sara Caprioli, Elena Kabo, Håkan Hansson & Anders Ekberg, **Wheel tread damage – a numerical study of railway wheel tread plasticity under thermomechanical loading**, *IMechE Journal of Rail and Rapid Transit*, vol 224, no 5, pp 435–443, 2010

[21] Roger Lundén, Tore Vernersson & Anders Ekberg, **Railway axle design – to be based on fatigue initiation or crack propagation?** *IMechE Journal of Rail and Rapid Transit*, vol 224, no 5, pp 445–453, 2010

[22] Björn Paulsson & Anders Ekberg, **Results to exemplify the joint EU-project INNOTRACK – Innovative Track Systems**, *IMechE Journal of Rail and Rapid Transit*, vol 224, no 5, pp 361–368, 2010

[23] Elena Kabo, Anders Ekberg, Peter Torstensson & Tore Vernersson, **Rolling contact fatigue prediction for rails and comparisons to test rig results**, *IMechE Journal of Rail and Rapid Transit*, vol 224, no 4, pp 303–317, 2010

[24] Anders Ekberg, **Guest editorial**, *IMechE Journal of Rail and Rapid Transit*, vol 224, no 4, pp i–iii, 2010

[25] Björn Paulsson & Anders Ekberg, **Cutting the life-cycle cost of track**,

Railway Gazette International, January, pp 48–51, 2010

[26] Elena Kabo, Roger Enblom & Anders Ekberg, **A simplified index for evaluating subsurface initiated rolling contact fatigue from field measurements**, *Wear*, vol 271, no 1–2, pp 120–124, 2011

[27] Jens C O Nielsen & Anders Ekberg, **Acceptance criterion for rail roughness level spectrum based on assessment of rolling contact fatigue and rolling noise**, *Wear*, vol 271, no 1–2, pp 319–327, 2011

[28] Erik Fridell, Martin Ferm & Anders Ekberg, **Emissions of particulate matters from railways – emission factors and condition monitoring**, *Transportation Research Part D: Transport and Environment*, vol 15, no 4, pp 240–245, 2010

[29] Erik Fridell, Anders Björk, Martin Ferm & Anders Ekberg, **On-board measurements of particulate matter emissions from a passenger train**, *IMechE Journal of Rail and Rapid Transit*, vol 225, no 1, pp 99–106, 2011

[30] Per Gullers, Paul Dreik, Jens C O Nielsen, Anders Ekberg & Lars Andersson, **Track condition analyser – detection of track irregularities based on instrumented wheelset measurements**, *IMechE Journal of Rail and Rapid Transit*, vol 225, no 1, pp 1–13, 2011
Awarded the 2011 SAGE Best Paper Award.

[31] Andreas Draganis, Fredrik Larsson & Anders Ekberg, **Numerical evaluation of the transient response due to non-smooth rolling contact using an arbitrary Lagrangian–Eulerian formulation**, *IMechE Journal of Engineering Tribology*, vol 226, no 1, pp 36–45, 2012

[32] Kalle Karttunen, Elena Kabo & Anders Ekberg, **A numerical study of the influence of lateral geometry irregularities on mechanical deterioration of freight tracks**, *IMechE Journal of Rail and Rapid Transit*, vol 226, no 6, pp 575–586, 2012
DOI: 10.1177/0954409712445115

[33] Sara Caprioli, Tore Vernersson & Anders Ekberg, **Thermal cracking of a railway wheel tread due to tread braking – critical crack sizes and influence of repeated thermal cycles**, *IMechE Journal of Rail and Rapid Transit*, vol 227, no 1, pp 10–18, 2013
DOI: 10.1177/0954409712452347

[34] Anders Ekberg, Bengt Åkesson & Elena kabo, **Wheel/rail rolling contact fatigue – Probe, predict, prevent**, *Wear*, 2013, DOI: 10.1016/j.wear.2013.12.004

Refereed conference papers

[1] Anders Ekberg, **Rolling contact fatigue of railway wheels – computer modelling and in-field data**, *2nd Mini Conference on Contact Mechanics and Wear of Rail/Wheel Systems*, Budapest, Hungary, Ed. I Zobory, Technical University of Budapest, ISBN 963-420-509-7, pp 154-163, July 29–31, 1996

[2] Anders Ekberg, Reine Lindqvist & Martin Olofsson, **Multiaxial fatigue – a probabilistic analysis of initiation in cases of defined stress cycles**, *Fatigue '99, 7th International Fatigue Congress*, Beijing, China, Eds. X R Wu & Z G Wang, HEP/EMAS, ISBN 1-901537-10-2, vol 2, pp 923–928, June 8–12, 1999

[3] Elena Kabo & Anders Ekberg, **Fatigue initiation in railway wheels – on the influence of defects**, *5th International Conference on Contact Mechanics and Wear of Rail/Wheel Systems*, Tokyo, Japan, University of Tokyo, pp 17–22, July 25–28, 2000
(a revised version published as the refereed paper [5])

[4] Anders Ekberg, Elena Kabo & Hans Andersson, **Predicting rolling contact fatigue of railway wheels**, *13th International Wheelset Congress*, Rome, Italy, 7 pp, September 17–21, 2001 (on CD)

[5] Anders Ekberg & Roger Lundén, **Rolling contact fatigue of railway wheels – towards validation of a predictive model**, *Fatigue 2002*, Stockholm, Sweden, vol 2, Ed. A Blom, EMAS, ISBN 1-901537-30-7, pp 843–850, June 3–7, 2002

[6] Mauro Cavalletti, Anders Ekberg, Alan Facchinetti, Giampaolo Mancini & Maurizio Stanca, **Prediction of rail vehicle mission loads and RCF damage by multibody modelling**, *1st MSC.ADAMS European User Conference*, London, UK, 12 pp, November 2002 (on CD)

[7] Anders Ekberg & Elena Kabo, **Rolling contact fatigue of railway**

wheels and rails – an overview, *Rolling Contact Fatigue: Applications and Development*, Brescia, Italy, Eds. S Beretta, F Cheli & G Donzella, ISBN 88-7398-005-8, pp 5–26, 2002

[8] Elena Kabo & Anders Ekberg, **The influence of defects in rolling contact fatigue**, *Rolling Contact Fatigue: Applications and Development*, Brescia, Italy, Eds. S Beretta, F Cheli & G Donzella, ISBN 88-7398-005-8, pp 85–93, November 15, 2002

[9] Elena Kabo & Anders Ekberg, **Material defects in rolling contact fatigue of railway wheels – the influence of defect size**, Proceedings *6th International Conference on Contact Mechanics and Wear of Rail/Wheel Systems*, Göteborg, Sweden, Eds. A Ekberg, E Kabo & J Ringsberg, Chalmers University of Technology, ISBN 91-631-3928-6, vol 1, pp 119–125, June 10–13, 2003
(a revised version published as the refereed paper [10])

[10] Anders Ekberg & Elena Kabo, **Rolling contact fatigue of railway wheels and rails – an overview**, Proceedings *6th International Conference on Contact Mechanics and Wear of Rail/Wheel Systems*, Göteborg, Sweden, Eds. A Ekberg, E Kabo & J Ringsberg, Chalmers University of Technology, Appendix II, pp 11–24, June 10–13, 2003
(an expanded version published as the refereed paper [11])

[11] Anders Ekberg, Elena Kabo & Jens Nielsen, **Integrating rolling contact fatigue analysis with simulation of dynamic train–track interaction**, *3rd International Conference "XXI Century Rolling Stock (ideas, requirements, projects)"*, St Petersburg, Russia, July 3–5, 11 pp, 2003

[12] Anders Ekberg, **Numerical prediction of fretting of railway axles**, *International Seminar on Railway Axles*, London, September 25–26, 37 pp, 2003
(a revised version published as the refereed paper [8])

[13] Jens C O Nielsen, Anders Ekberg, Elena Kabo & Roger Lundén, **Integrated analysis of dynamic train–track interaction and rolling contact fatigue**, *14th International Wheelset Congress*, Orlando, Florida, USA, 17–21 October, 15 pp, 2004

[14] Roger Lewis, Rob S Dwyer-Joyce, Stefano Bruni, Anders Ekberg, Mauro Cavalletti, Kamel Bel Knani, **A new CAE procedure for railway wheel tribological design**, *2004*, Orlando, Florida, USA, 17–21 October, 14 pp, 2004

[15] Roger Lewis, Stefano Bruni, Anders Ekberg & Rob S Dwyer-Joyce, **A design tool for railway wheels incorporating damage models and dynamic simulations**, *2005 Joint Rail Conference*, Pueblo, Colorado, USA, 16–18 March, 9 pp, 2005

[16] Elena Kabo, Jens Nielsen & Anders Ekberg, **Prediction of dynamic train–track interaction and subsequent material deterioration**, *19th IAVSD symposium*, Milano, Italy, 29 August – 2 September, 3 pp, 2005

[17] Robert Fröhling, Anders Ekberg & Elena Kabo, **Developing hollow wear limits based on field experience and numerical simulations**, *7th International Conference on Contact Mechanics and Wear of Rail/Wheel Systems*, Brisbane, Australia, September 24–27, 9 pp, 2006
(A revised version published as the refereed journal paper [16])

[18] Tord Karlsson, Andrea Ghidini, Andrea Gianni & Anders Ekberg, **Innovative bainitic steel grade for solid wheels tested in arctic heavy haul operations**, *7th International Conference on Contact Mechanics and Wear of Rail/Wheel Systems*, Brisbane, Australia, September 24–27, 6 pp, 2006

[19] Björn Paulsson, Martin Platzer & Anders Ekberg, **INNOTRACK – Innovative Track System — A unique approach from infrastructure managers and competitive track supply industry to develop the innovative products of the future**, *7th World Congress on Railway Research*, Montréal, Canada, June 5–7, 11 pp, 2006

[20] Andrea Gianni, Tord Karlsson, Andrea Ghidini & Anders Ekberg, **Bainitic steel grade for solid wheels: metallurgical, mechanical and in-service testing**, *Proceedings International Heavy Haul Association Specialist Technical Session (IHHA2007)*, Kiruna, Sweden, June 11–13, pp 701-711, 2007.
Received a best paper award at the IHHA2007 conference.
(a revised version published as the refereed journal paper [18])

[21] Johan Sandström & Anders Ekberg, **Predicting crack growth and risks of rail breaks due to wheelflat impacts in heavy haul operations**, Proceedings International Heavy Haul Association Specialist Technical Session (IHHA 2007), Kiruna, Sweden, June 11–13, pp 379-388, 2007
(an expanded version published as the refereed journal paper [17])

[22] Björn Paulsson, Anders Ekberg & Francis Delooz, **Results to exemplify the joint EU-project INNOTRACK – Innovative track systems**, proceedings of the *9th International Heavy Haul Conference*, Shanghai, China, June 22–24, vol I, pp 128-134, 2009
(a revised version submitted for journal publication [22])

[23] Roger Lundén, Tore Vernersson & Anders Ekberg, **Railway axle design – to be based on fatigue initiation or crack propagation?**, proceedings of the *9th International Heavy Haul Conference*, Shanghai, China, June 22–24, vol I, pp 509-517, 2009
(a revised version submitted for journal publication [21])

[24] Tore Vernersson, Elena Kabo, Håkan Hansson & Anders Ekberg, **Wheel tread damage – a numerical study of railway wheel tread plasticity under thermomechanical loading**, accepted for the *9th International Heavy Haul Conference*, Shanghai, China, June 22–24, vol I, pp 465-472, 2009
(a revised version submitted for journal publication [20])

[25] Björn Paulsson, Peter Pointner, Jay Jaiswal, Rob Carroll, Gunnar Baumann, Burchard Ripke, John Amoore & Anders Ekberg, **An overview of wheel–rail interface related research in the European project INNOTRACK including issues in technical and economical validation**, Proceedings *8th International Conference on Contact Mechanics and Wear of Rail/Wheel Systems*, Florence, Italy, September 15–18, pp 535–537, 2009

[26] Jens C O Nielsen & Anders Ekberg, **Acceptance criterion for rail roughness level spectrum based on assessment of rolling contact fatigue and rolling noise**, Proceedings of the *8th International Conference on Contact Mechanics and Wear of Rail/Wheel Systems*, Florence, Italy, September 15–18, vol 2, pp 409-418, 2009
(a revised version submitted for journal publication [27])

[27] Elena Kabo, Roger Enblom & Anders Ekberg, **Assessing risks of subsurface initiated rolling contact fatigue from field measurements**, Proceedings *8th International Conference on Contact Mechanics and Wear of Rail/Wheel Systems*, Florence, Italy, September 15–18, vol 1, pp 355-361, 2009
(a revised version submitted for journal publication [26])

[28] Per Gullers, Paul Sundvall, Jens C O Nielsen, Anders Ekberg & Lars Andersson, **Track condition analyser – assessment of need for track maintenance based on instrumented wheelset measurements**, proceedings *16th International Wheelset Congress*, 2010, 12 pp (on CD)
(an expanded version submitted for journal publication [30])

[29] Björn Paulsson, Jay Jaiswal & Anders Ekberg, **The EU-project INNOTRACK – a description of highlights and how they have been implemented**, proceedings of the *9th World Congress on Railway Research*, May 22–26, 2011, 6 pp (on CD)
Received a best paper award in the category "An even more competitive and cost efficient railway"

[30] Andreas Draganis, Fredrik Larsson & Anders Ekberg, **Rolling contact stress evaluations under non-smooth conditions using an arbitrary Lagrangian–Eulerian formulation**, ITC2011, Hiroshima, Japan, October 30–November 3, 1p extended abstract, 2011

[31] Johan Sandström, Elena Kabo, Arne Nissen, Fredrik Jansson & Anders Ekberg, **Deterioration of insulated rail joints – a three-year field study**, Proceedings of the *9th International Conference on Contact Mechanics and Wear of Rail/Wheel Systems* (CM2012), August 27 – 30, Chengdu, China, pp 301–308, 2012,

[32] Sara Caprioli & Anders Ekberg, **Numerical evaluation of the material response of a railway wheel under thermomechanical braking conditions**, Proceedings of the *9th International Conference on Contact Mechanics and Wear of Rail/Wheel Systems* (CM2012), August 27 – 30, Chengdu, China, pp 460–467, 2012

[33] Andreas Draganis, Fredrik Larsson & Anders Ekberg, **Modelling the thermomechanical wheel–rail interface during rolling contact**, Proceedings of the *9th International Conference on Contact Mechanics and Wear of Rail/Wheel Systems* (CM2012), August 27 – 30, Chengdu, China, pp 451–459, 2012

[34] Kalle Karttunen, Elena Kabo & Anders Ekberg, **The influence of track geometry irregularities on rolling contact fatigue**, Proceedings of the *9th International Conference on Contact Mechanics and Wear of Rail/Wheel Systems* (CM2012), August 27 – 30, Chengdu, China, pp 540–546, 2012

[35] Anders Ekberg, Bengt Åkesson & Elena Kabo, **Wheel/rail rolling contact fatigue – probe, predict, prevent**, Proceedings of the *9th International Conference on Contact Mechanics and Wear of Rail/Wheel Systems* (CM2012), August 27 – 30, Chengdu, China, pp 29–41, 2012 (invited keynote)

[36] Anders Ekberg, Elena Kabo, Kalle Karttunen, Bernt Lindqvist, Roger Lundén, Thomas Nordmark, Jan Olovsson, Ove Salomonsson & Tore Vernersson, **Identifying root causes of heavy haul wheel damage phenomena**, Proceedings of the *10th International Heavy Haul Conference* (IHHA 2013), February 4–6, New Dehli, India, pp 520–526, 2013

Books and theses

[1] Anders Ekberg, Bengt Åkesson & Elena Kabo, **Rolling contact fatigue of wheels and rails – Probe, Predict, Prevent**, accepted as keynote presentation at the *9th International Conference on Contact Mechanics and Wear of Rail/Wheel Systems* (CM2012), Chengdu, China, August 27–30, 2012, 13 pp

[2] Anders Ekberg & Magnus Wiberg, **LABFEM – Lateral buckling of beams calculated by the finite element method**, Thesis for the Degree of Master of Science, *Chalmers Structural Mechanics*, Report 92:1, 52 pp, 1992

[3] Anders Ekberg, **Rolling contact fatigue of railway wheels**, Thesis for the Degree of Licentiate of Engineering, *Chalmers Solid Mechanics*, Göteborg, ISSN 0283-8672 1997:1, 55 pp, 1997 (summary in Swedish and English, and three appended papers)

[4] Anders Ekberg, **Fatigue – a survey**, *Chalmers Solid Mechanics*, Publication U67, 60 pp, 1997

[5] Anders Ekberg, **Fatigue – a survey**, *Chalmers Solid Mechanics*, Publication U67 (2nd ed), 74 pp, 1998
(expanded and revised version of [4])

[6] Anders Ekberg, **Rolling contact fatigue of railway wheels – towards tread life prediction through numerical modelling considering material imperfections, probabilistic loading and operational data**, Doctoral Dissertation, *Chalmers Solid Mechanics*, Göteborg, ISBN 91-7197-887-9, 128 pp, 2000
(summary in Swedish and English, and six appended papers)

[7] Anders Ekberg, **Multiaxial fatigue**, *Chalmers Solid Mechanics*, 38 pp, 2001

[8] Tore Dahlberg & Anders Ekberg, **Failure Fracture Fatigue**, *Studentlitteratur*, ISBN 91-44-02096-1, 356 pp, 2002 (author of chapters 7 **An introduction to fatigue**, and 10 **Multiaxial fatigue**)

[9] Anders Ekberg, Elena Kabo & Jonas Ringsberg (eds), **Proceedings 6th International Conference on Contact Mechanics and Wear of Rail/Wheel Systems**, Göteborg, June 10–13, vol I+II (ISBN 91-631-3928-6, 91-631-3929-4) & App I+II, 572+19+24 pp, 2003

[10] Anders Ekberg, **Multiaxial fatigue** (2nd ed), *Chalmers Solid Mechanics*, 48 pp, 2004
(expanded and revised version of [7])

[11] Roger Lundén, Anders Ekberg, Elena Kabo, Bengt Åkesson, **Nordiskt järnvägsseminarium 2008 – sammanfattningar av presentationer**, 58 pp, 2008

[12] Anders Ekberg, **Fatigue of railway wheels**, in Wheel-rail interface handbook (editors Roger Lewis and Ulf Olofsson), *Woodhead Publishing*, Cambridge (UK), ISBN 978-1-84569-412-8, pp 215-244, 2009

[13] Anders Ekberg & Björn Paulsson (eds), **INNOTRACK–Concluding technical report**, *International Union of Railways (UIC)*, ISBN 978-2-7461-1850-8, 288 pp, 2010

Popular science and internal reports

[1] Anders Ekberg & Hans Bjarnehed, **Rolling contact fatigue of wheel/rail systems – a literature survey**, *Chalmers Solid Mechanics*, Report F182, Gothenburg, Sweden, 50 pp, 1995

[2] Anders Ekberg, **Chaos – some basic concepts**, Gothenburg, Sweden, 10 pp, 1997

[3] Anders Ekberg, **Friction – some notes**, Gothenburg, Sweden, 6 pp, 1997

[4] Anders Ekberg, **Wear – some notes**, Gothenburg, Sweden, 22 pp, 1997

[5] Anders Ekberg, **Neural networks – an introduction**, Gothenburg, Sweden, 6 pp, 1998

[6] Anders Ekberg, **Random multiaxial fatigue – 13 annotated references 1991-1998**, *Chalmers Solid Mechanics*, Report F 209, Göteborg, 15 pp, 1998

[7] Tore Dahlberg, Anders Ekberg & Peter Möller, **Exercises in fracture and fatigue analysis**, *Chalmers Solid Mechanics*, Publication U74, 80 pp, 1998

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Software

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[2] **FIERCE** – Determination of rolling contact fatigue impact as a post-processor to multy-body dynamics simulations. Developed as stand-alone code including GUI. Algorithms also implemented in commercial packages such as ADAMS/Rail and GENSYS. (matlab)

[3] **PRESOL** – a pre-processor for sun-kink analysis by Abaqus. Includes routines to account for curves, initial deformation (including evaluation of buckling modes), etc (Python)

[4] **CHARMEC www-pages** – Script that generates the webpages at www.chalmers.se/charmec with cross-reference links etc. (Python)