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Professor in the School of Civil Engineering
Programme Director MSc in Railway Systems Engineering and Integration

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About

Professor Felix Schmid is the programme director for the MSc in Railway Systems Engineering and Intergration.

Biography

Having graduated from the Eidgenössische Technische Hochschule (ETH or Swiss Federal Institute of Technology) in Zürich in 1976, with a degree in electrical engineering, Professor Schmid enrolled on an interdisciplinary postgraduate programme on third world development. After completing the taught section he then joined a small software house where he was required to analyse real-time systems and write the necessary computer code.

In 1978 Felix moved to England and started work with GEC Traction in Manchester as a train control systems engineer. From 1982 to 1985 he completed a university apprenticeship at UMIST (in ultra-low current electronics) and at Salford University (in high-speed metal-forming). Professor Schmid began lecturing at Brunel University in control engineering and computer integrated manufacturing (CIM) in 1985. He led the Engineering Programmes with French and German and also completed a part-time PhD in Education for CIM Engineers.

In 1993 he was seconded to the Swiss Railway Inspectorate where he was involved in the testing of signalling systems and in introducing advanced technology to a consignment of private railways. He later returned to England after having enjoyed the railway industry in Switzerland and was offered a new post at the University of Sheffield, as a Senior Lecturer, developing the MSc in Railway Systems Engineering. This programme had its first intake in autumn 1995 and flourished at Sheffield until summer 2005, when it was moved to Birmingham to benefit from the growing strength of the University's Centre for Railway Research. Professor Schmid moved with the programme, albeit with a part-time secondment to University of Sheffield for two years, seeing out the last Sheffield based students. At the University of Birmingham he was appointed to the post of associate professor in railway systems engineering.

Teaching

Professor Schmid teaches aspects of railway systems engineering, notably, train control, signalling, economics and strategic management. Together with Charles Watson and Piers Connor he has developed railway systems engineering short programmes for Bechtel, HMRI, London Underground and other organisations.

Research

Inherently, his research interests are those of a railway systems engineer, that is, they are wide-ranging, from railway capacity through to human factors in safety critical systems. However, of main interest to Professor Schmid are the robust forms of organisation and leadership in highly safety critical businesses. Currently he is supervising six PhD students working in areas such as train control algorithms, evaluation of the benefits of systems engineering, road energy use, human factors in control rooms, freight demand modelling and simulator based train driver training.

Other activities

Membership of Professional Organisations

- Fellow of the Institution of Mechanical Engineers
- Fellow of the Institution of Railway Signalling Engineers
- European Railway Engineer (EurailIng)
- Councillor, Union of European Railway Engineers' Associations
- Railway Study Association

External Examining

- University of East London, Undergraduate programmes in engineering and doctorate
- Kingston University, Foundation and BEng degrees in Railway Rolling Stock Systems
- External examiner for doctorates at University of Birmingham, Loughborough University, Manchester Metropolitan University, Staffordshire University, Universidad de Ciudad Real

External Speaking Engagements

- Lecture on Isambard Kingdom Brunel (presented 10 times, in different forms)
- Lecture on Swiss Approaches to Railway Capacity Management (presented 3 times, in different forms)
- Lecture on Straw-bale Construction of multi-storey buildings (presented 2 times)

Honorary Lectureships

- University of Sheffield
- École Centrale Lille
- ENPC, École Nationale des Ponts et Chaussées, Paris

University Committees

- Committee member of the AUT at Brunel University
- College computer committee at University of Birmingham

External committees / working groups

- Qualifications committee of the Union of European Railway Engineers' Associations
- Councillor, Union of European Railway Engineers' Associations

Other Interests

Straw-bale construction of multi-storey buildings, promotion of railway transport, development of a railway training and test facility in the West Midlands

Publications

"Analysis of the structural characteristics of an intermediate rail vehicle and their effects on vehicle crash performance", X. Xue, F. Schmid and R.A. Smith, Journal of Rail and Rapid Transit, Pro¬ceedings of the Institution of Mecha¬ni¬cal Engineers, Vol. 215, Part F, No. 3, pp.153-163, ISSN 0 954 4097, January 2007.

"A digital filter-based approach to the remote condition monitoring of railway turnouts", F.P. Garcia and F. Schmid, Short Communication, Vol., No. , pp., Reliability Engineering and System Safety, ISSN 0 951 8320/03, Elsevier Science, Amsterdam, 2006

"Unobserved component models applied to the assessment of wear in railway points, a case study", F.P. Garcia, D.J. Pedregal, F. Schmid, Vol., No. , pp., European Journal of Operational Research, 2006.

"Signal processing for remote condition monitoring of railway points", M. McHutchon, W. Stasziewski, F. Schmid, Strain, Blackwell Science, May 2005.

"Analysis of crush behaviours of a rail cab car and structural modifications for improved crash¬worthi¬ness", X. Xue, R.A. Smith, F. Schmid, International Journal of Crash¬worthi¬ness, Vol. 10, No. 2, pp.125-136, March 2005.

"Discussion: Benefits of lower mass trains for high speed rail operations", B.P. Rochard and F. Schmid, S. Hillmansen and R.A. Smith, Proceedings of the Institution of Civil Engineers, Transport, Vol. 158, No. TR1, pp.1-4, February 2005.

"A study of modeling approaches for rail vehicle collision behaviour", X. Xue, F. Schmid, R.A. Smith, International Journal of Crash¬worthi¬ness, Vol. 9, No. 5, pp.515-525, November 2004.

"Benefits of Light Weighting of Railway Rolling Stock", B.P. Rochard, F. Schmid, Proceedings of the Institution of Civil Engineers, Transport, Vol. 157, No. TR1, pp.51-64, February 2004.

"RCM2 predictive maintenance of railway systems based on unobserved com¬po¬nents models", D.J. Pedregal, F.P. Garcia; F. Schmid, Vol. 83, No. 1, pp.103-110(8), Reliability Engineering and System Safety, ISSN 0 951 8320/03, Elsevier Science, Amsterdam, January 2004.

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"RCM2 Aplicado a Sistemas Automáticos de Accionamiento de Aguyas en Vías de Alta Velocidad", F.P. Garcia Marquez, F. Schmid and J. Conde Collado, No. 167, pp.20-26, Mantenimiento. Ingenería Industrial y de Edificios, September 2003.

"A reliability centered approach to remote condition monitoring. A railway points case study". F.P. Garcia Marquez, F. Schmid and J. Conde Collado, Vol. 80, No. 1, pp.33-40, Reliability Engineering and System Safety, ISSN 0 951 8320/03, Elsevier Science, Amsterdam, 2003.

"Multisensor Integration Methods in the Development of a Fault Tolerant Train Navigation System", A. Mirabadi, F. Schmid, Neil Mort, The Journal of Navigation, Vol. 56, pp.385-398, The Royal Institute of Navigation, 2003.

"Mantenimiento Centrado en la Fiabilidad y Monitorización Remota Basada en la Condición, RCM2: Un caso de Estudio", F.P. Garcia Marquez, F. Schmid and J. Conde Collado, Vol. 5, No. 26, pp 35-41, Ingenería y Gestión de Activos Mante¬ni¬miento, ISSN 1695-3754, Madrid, December 2002.

"Train Control Research in Europe", F.Schmid, Proceedings of the Institution of Railway Signalling Engineers for 2001-2002, pp.52-66, IRSE, London, 2002.

"An introduction to China's rail transport Part 1: history, present and future of China's railways", X. Xue, F. Schmid, R.A. Smith, Proceedings of the Institution of Mechanical Engineers, Vol. 216, Part F, No. 3, pp.153-163, Journal of Rail and Rapid Transit, ISSN 0 954 4097, October 2002.

"An introduction to China's rail transport Part 2: urban rail transit systems, highway transport and the reform of China's railways", X. Xue, F. Schmid, R.A. Smith, Proceedings of the Institution of Mechanical Engineers, Vol. 216, Part F, No. 3, 165-174, Journal of Rail and Rapid Transit, ISSN 0 954 4097, October 2002.

"Managing the critical wheel/rail interface", A. Kapoor, F. Schmid and D.J. Fletcher, Railway Gazette International, Vol. 158, No. 1, pp.25-28, ISSN 0 373 5346, January 2002.

"A review of methods to measure and calculate train resistances", B. Rochard, F. Schmid, Proceedings of the Institution of Mechanical Engineers, Vol. 214, Part F, No. 4, pp.185-199, Journal of Rail and Rapid Transit, ISSN 0 954 4097, November 2000.

"Control and operation of tilting train services", F. Schmid, special issue on tilting trains of the Proceedings of the Institution of Mechanical Engineers, Vol. 212, Part F, No. 1, pp.73-84, Journal of Rail and Rapid Transit, ISSN 0 954 4097, April 1998. "Introduction: theory of tilting train behaviour", N.R. Harris, F. Schmid and R.A. Smith, special issue on tilting trains of the Proceedings of the Institution of Mechanical Engineers, Vol. 212, Part F, No. 1, pp.1-6, Journal of Rail and Rapid Transit, ISSN 0 954 4097, April 1998.

"Electric or Diesel - Tilting may Tip the Balance", F. Schmid, Railway Gazette International, Vol. 153, No. 8, pp 521-524, ISSN 0 373 5346, August 1997.

"Reliability demands the simplification of train control techniques", F. Schmid and N. König, Railway Gazette International, Vol. 151, No. 9, pp 561-564, ISSN 0 373 5346, September 1995.

"The Helical Systems Design Process", A.W.S. Ainger, F. Schmid, Computer Integrated Manufacturing Systems Journal, Elsevier Science, Vol.8, No.2, pp 105-115,

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“High-quality Language Teaching for Engineers Based on Integrated Language Acquisition”, J.-N. Ezingeard and F. Schmid, International Journal of Engineering Education, Vol. 9, No. 4, 1993.

“Chopper-controlled Mining Locomotives for North America”, F. Schmid, GEC Journal for Industry, Vol. 6, No. 2, June 1982.

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