

Stephen J Maher

Zuse Institute Berlin
Takustr. 7, Berlin, Germany

EDUCATION

PhD Mathematics

July 2010 – August 2013

University of New South Wales, Australia.
Advisors: Gary Froyland and Cheng-Lung Wu.

The aim of my PhD research is to develop airline planning solutions that are more recoverable in the event of disruption compared to current practice. My research involves considering uncertainty during the solution process for airline planning problems. Uncertainty information is integrated with the planned solution using the technique of recoverable robustness.

Invited to GERAD (Group for Research in Decision Analysis) in Montréal by Guy Desaulniers and François Soumis. June 2012 – August 2012

Bachelor of Mathematics (Advanced) First Class Honours

2004 – 2007

University of Wollongong, Australia

My honours thesis investigated the mathematical modelling of nanotube mechanics. The aim of this research was to develop a model to examine the forces between two nanotubes of equal diameters.

MATHEMATICS AND COMPUTING SKILLS

Solution techniques: Column generation, column-and-row generation, Benders' decomposition, parallel programming, HPC.
Optimisation software: Cplex (C and C++), SCIP (C and C++), Gurobi (C++).
Programming Languages: C++, C, Python, Java.

AWARDS

Aviation Applications Dissertation Prize 2014
Awarded by the Aviation Applications Section of INFORMS.

Lift-off Fellowship 2014
Australian Mathematical Society Early Career Researcher Fellowship.

Anna Valicek Medal 2012
Winner of the international student paper award sponsored by the Airline Group of the International Federation of Operational Research Societies (AGIFORS).

Best Student Talk Runner-up 2012
NSW/ACT Australian and New Zealand Industrial and Applied Mathematics (ANZIAM) Branch Meeting.

Australian Postgraduate Award scholarship July 2010 – Current

PUBLICATIONS

S. J. Maher. "A novel passenger recovery approach for the integrated airline recovery problem".
Computers & Operations Research. Accepted November 2014.

S. J. Maher. "Solving the integrated airline recovery problem using column-and-row generation".
Transportation Science. Accepted May 2014.

S. J. Maher, G. Desaulniers, F. Soumis, “Recoverable robust single day aircraft maintenance routing problem”.
Computers & Operations Research, 51:130–145, 2014

G. Froyland, S. J. Maher, C.-L. Wu. “The recoverable robust tail assignment problem”.
Transportation Science, 48(3):351–372, 2014.

S. J. Maher and J. M. Murray “The unrooted set covering connected subgraph problem differentiating between HIV envelope sequences”.
Submitted.

PRESENTATIONS *The single day aircraft maintenance routing problem.*
IFORS Conference, Barcelona, Spain, 2014

A novel passenger recovery approach for the integrated airline recovery problem.
AustMS Conference, Sydney, Australia, 2013

Solving the integrated airline recovery problem using column-and-row generation.
ANZIAM Conference, Newcastle, Australia, 2013

Integrated airline recovery problem on a minimal disruption neighbourhood. ISMP, Berlin, Germany, 2012

Integrated airline recovery problem on a minimal disruption neighbourhood. International Workshop on Column Generation, Bromont, Canada, 2012

The recoverable robust tail assignment problem. AGIFORS Symposium, Scottsdale, USA, 2012

The recoverable robust tail assignment problem. INFORMS Annual Meeting, Phoenix, USA, 2012

The recoverable robust tail assignment problem. ANZIAM Conference, Warrnambool, 2012

Solving the integrated airline recovery problem using column-and-row generation.
NSW/ACT ANZIAM Branch Meeting, Sydney, Australia, 2012

The recoverable robust tail assignment problem. IFORS Conference, Melbourne, 2011

EMPLOYMENT **Zuse Institute Berlin, Germany** February 2014 – Current
Post-doctoral Researcher.

University of New South Wales, Australia September 2013 – January 2014
Post-doctoral Fellow - School of Mathematics and Statistics.

University of New South Wales, Australia January 2011 – June 2012
Tutor - First year calculus.

Macquarie Bank, Australia September 2008 - June 2010
Price Testing Data Analyst

Macquarie Bank is an Australian investment bank with offices in Australia, Hong Kong, London and New York. Within this role my major achievements included:

- Received three promotions, from Associate to Manager.
- Consolidated the price testing duties from 7 staff to 1. Achieved through the development of automated processes.
- Reduced the end of month reporting period from 5 to 3 days.
- Assisted in the development of business relationships to sell price testing services

to other business units within the bank.

- Provide a value analysis of complex credit and equity derivatives as part of due diligence in a bank takeover.

Earth and Environmental Sciences, University of Wollongong, Australia

Laboratory Assistant

July 2008 – September 2008

University of Newcastle, Australia

Tutor - First year mathematics

February 2008 – June 2008

University of Wollongong, Australia

Tutor

- First year mathematics

- First and second year economics

July 2006 – February 2008

July 2008 – September 2008