

## Sean C. C. Bailey

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### Professional Preparation

University of Western Ontario, Canada	Mechanical Engineering	B.E.Sc., 1998
University of Western Ontario, Canada	Mechanical Engineering	M.E.Sc., 2001
University of Ottawa, Canada	Mechanical Engineering	Ph.D. 2002-2006

### Appointments

Jan. 2010–pres	Assistant Professor, Dept. of Mech. Engin., University of Kentucky
Jan. 2009–Dec. 2010	Associate Research Scientist, Dept. of Mech. & Aerosp. Engineering, Princeton University
Jan. 2007–Dec. 2008	Post-Doctoral Fellow, Dept. of Mech. & Aerosp. Engineering, Princeton University

### Honors and Awards

2007 Natural Sciences and Engineering Research Council of Canada PDF award  
2004 Ontario Graduate Scholarship in Science and Technology  
2002 Natural Sciences and Engineering Research Council of Canada PGSB Scholarship  
2002 University of Ottawa Excellence Scholarship  
1999 Natural Sciences and Engineering Research Council of Canada PGSA Scholarship

### Publications most relevant to current proposal

Bailey, S. C. C., Kunkel, G. J., Hultmark, M., Vaillikivi, M., Hill, J. P., Meyer, K. A., Tsay, C., Arnold, C. B. and Smits, A. J. (2010) Turbulence measurements using a nanoscale thermal anemometry probe, *Journal of Fluid Mechanics*, **In Press**

Yakhot, V., Bailey, S. C. C. and Smits, A. J. (2010) Scaling of global properties of turbulence and skin friction in pipe and channel flows, *Journal of Fluid Mechanics*, **652**, 65-73.

Bailey, S. C. C. and Smits, A. J. (2010) Experimental investigation of the structure of large- and very-large-scale motions in turbulent pipe flow, *Journal of Fluid Mechanics*, **651**, 339-356.

Hultmark, M., Bailey, S. C. C. and Smits, A. J. (2010) Scaling of near-wall turbulence in pipe flow, *Journal of Fluid Mechanics*, **649**, 103-113.

Bailey, S. C. C., Hultmark, M., Schumacher, J., Yakhot, V. and Smits, A. J. (2009) Measurement of Local Dissipation Scales in Turbulent Pipe Flow, *Physical Review Letters*, **103**, 14502.

Bailey, S. C. C., Hultmark, M., Smits, A. J. and Schultz, M. P. (2008) Azimuthal structure of turbulence in high Reynolds number pipe flow, *Journal of Fluid Mechanics*, **615**, 121-138.

### Other significant publications

Bailey, S. C. C., Tavoularis, S. (2008) Measurements of the velocity field of a wing-tip vortex, wandering in grid turbulence, *Journal of Fluid Mechanics*, **601**, 281-315.

Bailey, S. C. C., Tavoularis, S. and Lee, B. H. K. (2006) Effects of freestream turbulence on wing-tip vortex formation and near field, *Journal of Aircraft*, **43**, 1282-1291.

Baratto, F., Bailey, S. C. C. and Tavoularis, S. (2006) Measurements of frequencies and spatial correlations of coherent structures in rod bundle flows, *Nuclear Engineering and Design*, **236**, 1830-1837.

Martinuzzi, R. J., Bailey, S. C. C. and Kopp, G. A. (2003) Influence of wall proximity on vortex shedding from a square cylinder, *Experiments in Fluids*, **34** 585-596.

Bailey, S. C. C., Martinuzzi, R. J. and Kopp, G. A. (2002) The effects of wall proximity on vortex shedding from a square cylinder: Three-dimensional effects, *Physics of Fluids*, **14**, 4160-4177.

## **Synergistic and Professional Activities**

- With Princeton University, has been working on the development of a nano-scale thermal anemometry probe which will revolutionize turbulence measurements
- Works with local and national individuals and companies to develop products where fluid mechanics and aerodynamics play an important role in the system.
- Member of ICET (International Collaboration on Experimental Turbulence), which seeks to answer unresolved issues with experimental methods for the measurement of wall-bounded flows. This project involves performing and comparing measurements taken with a range of instrumentation and methodologies in three high Reynolds number boundary layer facilities located in Stockholm, Melbourne and Chicago.
- Peer reviewer for several international journals in the field of fluid mechanics.
- Member of American Physical Society, Division of Fluid Dynamics.

## **Graduate and Postgraduate Advisors**

R. J. Martinuzzi (Graduate), G. A. Kopp (Graduate), S. Tavoularis, (Graduate), A. J. Smits (Postgraduate)

## **Recent collaborators**

C. Arnold (Princeton U.), B. McKeon (CalTech), M. Schultz (USNA), J. Schumacher (TU Ilmenau), S. Tavoularis (U. Ottawa), V. Yakhot (Boston U.), I. Marusic (U. Melbourne), J. Monty (U. Melbourne), H. Nagib (IIT), N. Hutchins (U. Melbourne), H. Alfredsson (KTH), A. Smits (Princeton U.)