

Flow around High Speed Trains in partially enclosed spaces & tunnels

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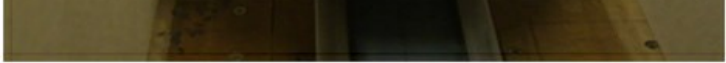
Welcome to my personal page, where you can find out about the research I am doing for the University of Birmingham [School of Civil Engineering \(/schools/civil-engineering/index.aspx\)](http://schools/civil-engineering/index.aspx) and [Centre for Railway Research and Education \(/research/activity/railway/index.aspx\)](http://research/activity/railway/index.aspx).

Research interests

My research explores the flow field around a high-speed, examining the transient forces on people and trackside objects. These aerodynamic forces may destabilize trackside workers, dislodge and damage equipment on trains, cause passenger ear discomfort, and induce early fatigue failure of light structures. My PhD looks at the effects of walls, short tunnels, and ventilated tunnels on the forces.

Most of my research is conducted at the [TRAIN Rig \(http://www.windresearch.org/mmr.html\)](http://www.windresearch.org/mmr.html) facility in Derby, a unique moving-model facility owned by the University of Birmingham. A demonstrational video is available [here \(http://www.youtube.com/watch?v=8dqh936Bp-I\)](http://www.youtube.com/watch?v=8dqh936Bp-I). I also use CFD software to supplement my experimental results and analyse the flow fundamentals in more detail. Thanks to the ample computational resources provided by the ['BlueBEAR' \(http://www.bear.bham.ac.uk/\)](http://www.bear.bham.ac.uk/) supercomputer I can use unsteady turbulence models to better model the turbulent flow structures. Through extensive validation I will examine whether cheaper test methods such as moving-model tests and CFD simulations can provide sufficiently accurate results to obviate the need for full-scale tests.





As well as academic research I provide technical assistance on commercial projects.

I am proud to work with supervisors [Professor Chris Baker \(/staff/profiles/civil/baker-chris.aspx\)](/staff/profiles/civil/baker-chris.aspx) and [Dr. Andrew Quinn \(/staff/profiles/civil/quinn-andrew.aspx\)](/staff/profiles/civil/quinn-andrew.aspx) who are at the forefront of international research on the aerodynamic effects of trains.

Uploaded in June 2012.

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