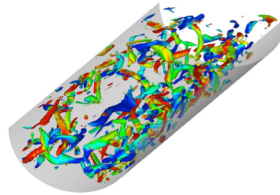




## Project description

Australia with her large land mass requires much resources to be transported via pipes. Australia has over 34000 Km of pipeline and this is expected to increase significantly as the demand increases with population. The energy needed to transport water and gas over long distances is enormous. There is consensus that there is a need to reduce transportation energy. One reason for massive energy consumption is due to turbulence. Turbulence is one the last unsolved classical fluid mechanics problem, listed as one of seven Clay Mathematics Institute (CMI) millennium prize problems with prize money of \$1,000,000. Only by understanding the physics of turbulence can one determine how turbulence relate to high-energy requirements.



## Primary aim

With the advancement in computer technology, data obtained from direct numerical simulations of turbulent flows is fast becoming an indispensable tool for turbulence research. One of the aims is to perform the turbulent pipe flow simulations matching those in industry applications. To date, no such simulation has been performed. The vast amount of information allows one to perform an in-depth study of the flow physics of turbulence.

## Student attributes

Strongly motivated candidates with a Bachelor Degree (with honours), or Masters

in Mechanical/Aerospace Engineering and who have demonstrated experience in aerodynamic research are encouraged to apply. The applicant should have outstanding academic results to be competitive for an academic scholarship. A good knowledge of fluid mechanics particularly in aerodynamics, flight mechanics, and turbulent flows is essential. The candidate is also required to have good programming skills, particularly with MATLAB and C.

## For further enquiries

Rey Chin

The University of Adelaide  
SA 5005 Australia

**Telephone:** +61 8 8313 5471

**Free-call:** 1800 061 459

**Online enquiries:** [rey.chin@adelaide.edu.au](mailto:rey.chin@adelaide.edu.au)

or

**Telephone:** +61 8 8313 5208

**Free-call:** 1800 061 459

**Online enquiries:** [adelaide.edu.au/student/enquiries](http://adelaide.edu.au/student/enquiries)