

## Suggested PhD Projects

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Project suggestions below reflect my interests and areas of work. They do not have funding attached: please do not ask me to find funding for you. Details of postgraduate fees can be found on the University of Manchester website.

Potential PhD applicants should have:

- a 1st or 2.1 degree from a good university;
- a degree in engineering, mathematics or physics;
- previous experience of CFD;
- computer-programming ability in at least one high-level language; ideally, either Fortran 2008 (or later) or C++2014 (or later);
- a good understanding of theoretical fluid mechanics;
- clear evidence of an ability to write scientific English.

## Some Suggested Areas and Titles (Applicant-defined projects are more than welcome)

### Renewable Energy

- tidal-stream turbines in waves;
- blade-element and CFD models of floating wind turbines;
- blade-element models for vertical-axis wind turbines;
- bio-inspired optimisation tools for turbine array design.

### Stokes Flow

- regularised Stokeslets and other methods for helical nano-swimmers.

### Turbulence Modelling

- development of wall functions for Reynolds-stress-transport modelling of turbulence;
- non-linear-eddy-viscosity modelling of turbulence for heat and scalar transport.

### Particulate Transport

- integral plume models for particle-laden plumes;
- CFD modelling of scour around hydraulic structures;
- random-walk modelling of particulate dispersion.