

## NITheP Colloquium

Monday, 12 October 2020, 16h00

**Dr Ashleigh Hutchinson**

University of the Witwatersrand & DSI-NRF Centre of Excellence in Mathematical and Statistical Sciences (CoE-MaSS).



### Navigating turbulent waters

**Abstract:** Approaches to modelling turbulence vary in complexity. From simple eddy viscosity closure models to complicated numerical simulations, all methods have their uses depending on the context in which they are to be applied. Turbulence is commonly observed in nature and in industry. Physicists and engineers alike aim to design reliable models that are of theoretical and industrial importance. However, this endeavour proves challenging and progress can only be made when theoretical, experimental, and computational approaches are integrated. Despite having these techniques at our disposal, turbulence is considered 'one of the oldest unsolved problems' in Physics. In this talk, we will investigate this claim as well as provide an overview of the different approaches to modelling turbulence. We will focus on one application, turbulent wakes, which play a valuable role in the design, maintenance, and control of turbines on wind farms.

**Bio:** Dr Ashleigh Jane Hutchinson is a Senior Lecturer at the University of the Witwatersrand, Johannesburg, in the School of Computer Science and Applied Mathematics, in the Faculty of Science. She is also the Assistant Director of the national DSI-NRF Centre of Excellence in Mathematical and Statistical Sciences (CoE-MaSS).

The focus of Dr Hutchinson's research is on developing mathematical models to solve real-world problems, with particular attention paid to modelling in fluid mechanics. Her research is a combination of theoretical work and practical applications.

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