MATH5453M Foundations of Fluid Dynamics

Homework 4

Please leave in my pigeonhole (located to the right of the door to my office—School of Mathematics 11.07) by Friday 15 December 2023 at 4pm

Attention: Initial deadline on Tuesday 28 November 2023

Please download the file located at

https://www.cbeaume.com/download/MATH5453_homework4.tar

by copying the above address and pasting it into your browser URL field, then untar it. You will find that it contains 7 folders entitled:

1. Control,
2. Edge,
3. Models,
4. Percolation,
5. Seed,
6. Solutions,
7. Threshold.

Each of these folders relates to one topic named in its title and contains two research articles.

Please email me (c.m.l.beaume@leeds.ac.uk) on Tuesday 28 November 2023 at the latest to give me three topic choices in order of preference, from your favourite to your 3$^{\text{rd}}$ favourite. I will endeavour to answer you, confirming your topic within 24h of receiving your message.

You will write a review on the confirmed topic. Your review should be targeted to a readership with a general understanding of undergraduate level fluid dynamics but no prior knowledge on transition to turbulence. You may choose to focus on one of the two papers, on both of them, or to include any other related paper of your choice. You will explain the research context (which might require reading beyond the suggested articles) and the problem that these papers address. You will then describe the results contained in these papers as well as explain why you think they are important. Your essay should not exceed 4 pages using normal formatting and might include one or two figures if they help your explanation (it is also an exercise in succinctness).

Assessment criteria include the displayed understanding of the literature and the appropriateness of the report for the audience.