



## Analysis Seminar

**Title:** An uncertainty principle for the Vaserstein distance

**Speaker:** Tom Carroll (UCC)

**Date:** Tue 16th April 2024 at 3:00PM

**Location:** E0.32 (beside Pi restaurant)

**Abstract:** This is joint work with Xavier Massaneda and Joaquim Ortega-Cerdà (Barcelona). I will discuss an uncertainty principle of the following form: for a function  $f$  with mean zero, then either the size of the zero set of the function or the cost of transporting the mass of the positive part of  $f$  to its negative part must be large. The result in two dimensions is due to Steinerberger. A partial result, which we improve upon, is due to Sagiv and Steinerberger. Related to this is a sharp upper estimate of the cost of transporting the positive part of an eigenfunction of the Laplacian. This proves a conjecture of Steinerberger and provides a lower bound on the size of a nodal set of the eigenfunction.

<https://ucd-ie.zoom.us/j/66723306041>

An uncertainty principle for the Vaserstein distance