

# David Martí-Pete

*University of Liverpool*

## Counterexamples to Eremenko's conjecture

The escaping set of an entire function consists of the points of the complex plane whose iterates tend to infinity. For a polynomial, the escaping set is an open neighbourhood of infinity, but for a transcendental entire function, this set is more complicated from a topological point of view. In 1989, Eremenko proved that the escaping set of a transcendental entire function is never empty and the connected components of its closure are all unbounded. He then conjectured that the components of the escaping set itself are also unbounded. This is known as Eremenko's conjecture and motivated a lot of the research in transcendental dynamics in the recent years. Last year, together with Rempe and Waterman, we proved that the escaping set of a transcendental entire function can have bounded components, which may even be a singleton. Moreover, we proved that every non-empty, full and connected compact set is a component of the escaping set of some transcendental entire function. In this talk I will discuss the properties of the escaping set and give a sketch of our construction.