

Joint extreme values of L -functions

ATHANASIOS SOURMELIDIS

CNRS, Université de Lille (France)

In this talk we will discuss about the extremal behavior of L -functions. As a special case we will see that any tuple of distinct primitive $\mathrm{GL}(1)$ and $\mathrm{GL}(2)$ L -functions can simultaneously attain large values on the critical line. This is an unconditional improvement of a general result due to Heap and Li who have assumed the Riemann Hypothesis for more than three such L -functions. The main machinery is the resonance method of Soundararajan and a variation of Heath-Brown's method for the fractional moments of the Riemann zeta-function. The latter method, in particular, builds on Gabriel's convexity theorems and makes it possible to avoid using any information on the zero distribution of L -functions whose degree is less than three.