

Multiplicative functions in short intervals and applications

Kaisa Matomäki *

ksmato@utu.fi

I will discuss recent work with Maksym Radziwill on multiplicative functions in short intervals (focusing on multiplicative functions taking values in $[-1, 1]$). Our main result shows that the behavior of a multiplicative function over “short intervals” of bounded length is often close to the behavior on a “long interval” (which is easier to understand).

This result has many consequences. I will describe in more detail consequences towards Chowla’s conjecture on correlations of Liouville’s function and the existence of smooth numbers in all short intervals of “square root length”

*Department of Mathematics and Statistics, University of Turku, 20014 Turku, FINLAND.