Atelier « Nouvelles approches en théorie probabiliste et multiplicative des nombres » 08-12 décembre 2014

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## Multiplicative functions in short intervals and applications

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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"

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