

## Exposé plénier

### 3 **The Erdős–Hooley Delta function**

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The Erdős–Hooley Delta function is defined for  $n \in \mathbb{N}$  as  $\Delta(n) = \sup_{u \in \mathbb{R}} \#\{d | n : e^u < d \leq e^{u+1}\}$ . In a seminal 1979 paper, Hooley proved that estimates of its partial sums can be exploited to count solutions to certain Diophantine equations. On the other hand, the Delta function is directly related to the distribution of divisors of integers. For these reasons, it has been studied extensively, with most of the work focusing on estimating its mean value and its “typical” value. I will present a historical account of work on these two questions, including some relatively recent developments (joint with Kevin Ford and Ben Green, and with Terence Tao).