



## NUMBER THEORY SESSION

### THE DENSITY OF SPECIAL ELEMENTS IN FINITE FIELDS, ON AVERAGE.

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#### **Abstract.**

In this talk we discuss the behaviour of some arithmetic functions related to the density of special elements in finite field extensions (normal,  $k$ -normal and primitive elements). Namely, if  $q$  is a fixed prime power and  $f(n)$  denotes the proportion of elements in the finite field  $\mathbb{F}_{q^n}$  with one of those specified properties, we discuss the behaviour of the arithmetic function  $f(n)$ , on average. In all cases, the function  $f(n)$  has a positive mean value, in the sense that the limit

$$\lim_{x \rightarrow +\infty} \frac{1}{x} \sum_{n \leq x} f(n),$$

exists and it is positive. We provide further information on this mean value and propose some possible questions for future research. The techniques are simple and rely on basic rudiments of the theory of arithmetic functions.

**Keywords:** normal elements, mean values, arithmetic functions.

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