YU-RU LIU, University of Waterloo, Waterloo, Ontario

On Erdős–Pomerance's conjecture for the Carlitz module

For $a \in \mathbb{Z}$, $m \in \mathbb{N}$ with $(a, m) = 1$, let $l_a(m)$ be the order of a in $(\mathbb{Z}/m\mathbb{Z})^*$. Let $\omega\big(l_a(m)\big)$ be the number of distinct prime divisors of $l_a(m)$. A conjecture of Erdős and Pomerance states that if $|a| > 1$, then the quantity

$$\frac{\omega\big(l_a(m)\big) - \frac{1}{2}(\log\log m)^2}{\frac{1}{\sqrt{3}}(\log\log m)^{3/2}}$$

distributes normally. The problem remains open until today. A conditional proof of it was obtained recently by Murty and Saidak. Li and Pomerance also provided an alternative proof of the same result. In this talk, we formulate an analogous question for the Carlitz module and provide an unconditional proof of it.

This is a joint work with W. Kuo.