
Number Theory Session

# ADDITIVE FORMS OVER TOTALLY RAMIFIED EXTENSIONS OF $\mathbb{Q}_2$.

**Drew Duncan***
(DEPARTMENT OF MATHEMATICS, COMPUTER SCIENCE, AND DATA SCIENCE JOHN CARROLL UNIVERSITY UNIVERSITY HEIGHTS, OH, USA)

Tuesday, February 06, 2024.
16h40 - 17h20

Online

**Abstract**.

Let $Gamma^*(d,k)$ be the least number $s$ so that any additive form $a_1x_1^d+\cdots+a_sx_s^d$ over the field $k$ has a nontrivial zero. We would like to know that $Gamma^*(d,k)\leq d_2+1$ holds for every $p$-adic field $k$. Thus far, progress on this has been restricted to degrees of ramification at most 2. In this talk we will see that, in the case of $d=2m$, $m$ odd, and $k$ a totally ramified extension of $\mathbb{Q}_2$ of arbitrarily high degree, with relatively little work we can obtain this bound, and even improve on it.

**Keywords:** Equations in many variables, $p$-adic fields, Forms of degree higher than two.

*Email: DREW.DUNCAN@GMAIL.COM