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BOUNDS FOR P-ADIC EXPONENTIAL SUMS AND LOG-CANONICAL THRESHOLDS

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Résumé : In joint work with Raf Cluckers, we propose a conjecture for exponential sums which generalizes both a conjecture by Igusa and a local variant by Denef and Sperber, in particular, it is without the homogeneity condition on the polynomial in the phase, and with new predicted uniform behavior. The exponential sums have summation sets consisting of integers modulo p^m lying p-adically close to y, and the proposed bounds are uniform in p, y, and m. We give evidence for the conjecture, by showing uniform bounds in p, y, and in some values for m. On the way, we prove new bounds for log-canonical thresholds which are closely related to the bounds predicted by the conjecture.