

# Weierstrass places on Kummer extensions

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In this talk, we will be interested in Weierstrass points on Kummer extensions  $y^m = f(x)$  over an algebraically closed field of characteristic  $p \geq 0$ . We will discuss conditions for an arbitrary integer  $s$  be a Weierstrass gap at a place  $P$ . For the totally ramified places, the established conditions will be necessary and sufficient. Some immediate consequences will be addressed. In particular, we will point out how this characterization will extend independent results of Hasse [1], Valentini-Madan [4], Leopoldt [2] and Towse [3].

## References

- [1] *H. Hasse*, Über den algebraischen Funktionenkörper der Fermatschen Gleichung, *Mathematische Abhandlungen*, Walter de Gruyter, 1975; originally in *Acta Univ. Szeged Sect. Math.*, **13** (1950), 195–207.
- [2] *H. W. Leopoldt*, Über die Automorphismengruppe des Fermatkörpers, *J. Number Theory* **56** (1996), 256–282.
- [3] *C. W. Towse*, Weierstrass points on cyclic covers of the projective line, *Trans. Amer. Math. Soc.* **348** (1996), no. 8, 3355–3378.
- [4] *R. C. Valentini* and *L. M. Madan*, Weierstrass points in characteristic  $p$ , *Mathematische Annalen*, **247** (1980), 123–132.