Low degree points on curves

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In this talk we will discuss an arithmetic analogue of the gonality of a curve over a number field: the smallest positive integer e such that the points of residue degree bounded by e are infinite. By work of Faltings, Harris--Silverman and Abramovich--Harris, it is well-understood when this invariant is 1, 2, or 3; by work of Debarre--Fahlaoui these criteria do not generalize to e at least 4. We will study this invariant using the auxiliary geometry of a surface containing the curve and devote particular attention to scenarios under which we can guarantee that this invariant is actually equal to the gonality . This is joint work with Geoffrey Smith.