

# Rational curves with hyperelliptic singularities

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A basic observation is that value semigroups of singularities impose nontrivial conditions on (the coefficients of parameterizations of) rational curves in projective space. Here we focus on rational curves with cusps whose semigroups are of hyperelliptic type. We prove that a genus- $g$  hyperelliptic singularity imposes at least  $(n-1)g$  conditions on rational curves of sufficiently large fixed degree in  $\mathbb{P}^n$ , and we prove that this bound is exact when  $g$  is small. We also obtain upper bounds on the gonality of rational curves with hyperelliptic cusps, as well as qualitative descriptions of their canonical models.