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Bounded height problems and Silverman Specialization Theorem
(joint work with D. Masser and U. Zannier)

Let $\mathcal{C}$ be a curve defined over $\overline{\mathbb{Q}}$. Bombieri, Masser and Zannier proved a result which may be rephrased as a toric analogue of Silverman's Specialization Theorem: Let $\Gamma \subset \mathbb{G}_m(\mathcal{C})$ be a finitely generated subgroup of non zero rational functions on $\mathcal{C}$ which does not contain non trivial constant functions. Then the set of $P \in \mathcal{C}(\overline{\mathbb{Q}})$ such that the restriction of the specialization map $\sigma_P : \mathbb{G}_m(\mathcal{C}) \to \mathbb{G}_m(\overline{\mathbb{Q}})$, $x \mapsto x(P)$ to Γ is not injective is a set of bounded height.

It turns out that in fact a weaker assumption suffices to have bounded height: *Let V be an algebraic subvariety of $\mathbb{G}_m^r(\mathcal{C})$ and let $\sigma_P : \mathbb{G}_m^r(\mathcal{C}) \to \mathbb{G}_m^r(\overline{\mathbb{Q}})$ be the specialization map. Then the set of $P \in \mathcal{C}(\overline{\mathbb{Q}})$ such that for some $\mathbf{x} \in \Gamma^r \setminus V$ we have $\sigma_P(\mathbf{x}) \in \sigma_P(V)$ is a set of bounded height.*

As a corollary we obtain a bounded height result for some degenerate unlikely intersections.