Non-secant defectivity via osculating projections

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Abstract. We introduce a method to produce bounds for the non secant defectivity of an arbitrary irreducible projective variety, once we know how its osculating spaces behave in families and when the linear projections from them are generically finite.

Then we analyze the relative dimension of osculating projections of Grassmannians, and as an application of our techniques we prove that asymptotically the Grassmannian $\mathbb{G}(r, n)$, parametrizing r-planes in $\mathbb{P}^n$, is not h-defective for $h \leq (\frac{n+1}{r+1})^{\lfloor \log_2(r) \rfloor}$. This bound improves the previous one $h \leq \frac{n-r}{3} + 1$, due to H. Abo, G. Ottaviani and C. Peterson, for any $r \geq 4$.

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