An intrinsic volume metric on the class of convex bodies

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In this talk I will present on a recent joint work with S. Hoehner, where we introduce a new intrinsic volume metric for the class of convex bodies in $\mathbb{R}^n$. As an application we prove an inequality for the asymptotic best approximation of the Euclidean unit ball by arbitrarily positioned polytopes with a restricted number of vertices under this metric. This result improves the best known estimate, and shows that dropping the restriction that the polytope is contained in the ball improves the estimate by at least a factor of dimension. The same phenomenon has already been observed in the special cases of volume, surface area and mean width approximation of the ball.