Johannes Schleischitz, Diophantine approximation on manifolds.

The talk deals with the rational approximation properties of a special class of smooth manifolds in Euclidean space $\mathbb{R}^k$. Budarina, Dickinson and Levesley considered curves parametrized by polynomials in one variable with integral coefficients, i.e. of the form $\{(X, P_2(X), \ldots, P_k(X)) : X \in [0,1]\}$ with $P_1(X) = X$ and $P_j \in Z[X]$ for $2 \leq j \leq k$. For sufficiently large parameters τ, depending (solely) on the degrees of the polynomials, they succeeded in determining the Hausdorff dimension of points on such a curve that are approximable to degree τ. The talk is dedicated to a recent improvement of this result by lowering the bound. A particularly good (in fact somehow best possible) reduction of the bound is obtained for the Veronese curve $P_j = X^j$ for $2 \leq j \leq k$, where the bound τ is decreased from $k-1$ to 1. The method of the proof, which differs from the method in the mentioned paper, will be sketched in the special case of the Veronese curve. If time suffices, possible generalizations to the case of polynomials in more variables, which leads to more general manifolds, will be discussed.