

Near optimal nodes for multivariate polynomial interpolation on certain curves

Abstract

For a compact set $E \subset \mathbf{R}^s$, the notion of an *asymptotic interpolation measure* (AIM) is introduced. Such a measure, **if it exists**, describes the asymptotic behavior of any scheme $\tau_n = \{x_{n,k}\}_{k=1}^{d_n^E}$, $n = 1, 2, \dots$, of nodes for multivariate n -th degree polynomial interpolation for which the norms of the corresponding interpolation operators do not grow geometrically large with n . We shall discuss the existence of AIM's for compact subsets of certain algebraic curves in \mathbf{R}^2 . It turns out that the theory of logarithmic potentials with external fields plays an important role in the investigation. Furthermore, for the sets just mentioned we give a computationally simple construction for “good” interpolation schemes.

References

1. E.B. Saff and V. Totik, *Logarithmic Potentials with External Fields*, Grundlehren Series, Springer-Verlag, 1997.
2. M. Goetz, V. Maymeskul and E.B. Saff, “Asymptotic distribution of nodes for near-optimal polynomial interpolation on certain curves in \mathbf{R}^2 ”, manuscript.