

Rational stable RBF-PU interpolation via VSKs

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For univariate functions with steep gradients, the rational polynomial interpolation is particularly suitable. However, its extension to high dimensions is still a challenging problem and, because of the dependence on meshes, it is not easy to implement for complex shapes of the domain.

Thus, we consider a very general and natural rational expansion for Radial Basis Function (RBF) interpolants. According to [2, 3], we investigate the well-posedness of the problem and we develop, via the Partition of Unity (PU) method [4], locally implemented by means of Variably Scaled Kernels (VSKs) [1], a stable scheme that allows to deal with large data sets.

Numerical experiments and applications to Earth's topography support our findings.

References

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