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Asymptotic optimality of periodic spline interpolation in non-parametric regression. (English) [Zbl 1211.62063](#)

J. Stat. Theory Pract. 2, No. 3, 465-474 (2008).

Summary: A class of interpolation type estimates based on the so-called periodic Lagrange splines is considered. Asymptotic rate optimality of these estimates is established for periodic Sobolev classes. Moreover, it is shown that these estimates are asymptotically optimal to the constant for certain classes of periodic analytic functions. An additional advantage of these estimates is a non-asymptotic upper risk bound which can be used, in principle, with any number of observations.

MSC:

[62G08](#) Nonparametric regression and quantile regression
[62G20](#) Asymptotic properties of nonparametric inference
[65D07](#) Numerical computation using splines

Cited in **2** Documents

Keywords:

non-parametric estimation; periodic Lagrange spline; Sobolev classes; analytic functional classes

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References:

- [1] Arcangéli, R.; Silanes, M.; Torrens, J., An extension of a bound for functions in Sobolev spaces, with application to (m,s)-spline interpolation and smoothing, Numer. Math., 107, 181-211 (2007) · [Zbl 1221.41012](#)
- [2] Boor, C., On the cardinal spline interpolant to eint, SIAM J. Math. Anal, 7, 930-941 (1976) · [Zbl 0341.41008](#)
- [3] Cai, TT, Rate of convergence and adaptation over Besov spaces under pointwise risk, Statistica Sinica, 13, 881-902 (2003) · [Zbl 1046.62046](#)
- [4] Cho, J.; Levit, B., Cardinal splines in nonparametric regression, Math. Methods Statist., 17, 19-34 (2008) · [Zbl 1282.62097](#)
- [5] Korneichuk, N.P., 1991. Exact Constants in Approximation Theory. Cambridge: Cambridge University Press.
- [6] Karlin, S., Studden, W.J., 1966. Tchebycheff Systems: With Applications in Analysis and Statistics. Wiley, NY. · [Zbl 0153.38902](#)
- [7] Lee, D., A simple approach to cardinal lagrange and periodic lagrange splines, J. Approx. Theory, 47, 93-100 (1986) · [Zbl 0624.41011](#)
- [8] Lee, D., On a minimal property of cardinal and periodic lagrange splines, J. Approx. Theory, 70, 335-338 (1992) · [Zbl 0778.41003](#)
- [9] Levit, B.; Stepanova, N., Efficient estimation of multivariate analytic functions in cube-like domains, Math. Methods Statist., 13, 253-281 (2004) · [Zbl 1132.62320](#)
- [10] Schoenberg, I.J., 1973. Cardinal Spline Interpolation. New York: SIAM. · [Zbl 0264.41003](#)

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