



ЛАБОРАТОРИЯ
ИНФОРМАЦИОННЫХ
ТЕХНОЛОГИЙ

СЕМИНАР
по ВЫЧИСЛИТЕЛЬНОЙ
И ПРИКЛАДНОЙ
МАТЕМАТИКЕ

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'' "Vj wt uf c{.'48'Lw{.'423: 'čv'37022

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....."Tqqo '532".....
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Speedup of interpolating spline construction

We propose a general approach to dyadic reduction of the dimensionality of tridiagonal linear systems in consequence of which the size of the system gradually shrinks to half, quarter etc. The information of the original system is preserved due to more complex right-hand sides of the reduced one without increasing the computational costs. The new approach based sequential algorithms yield more than 1.6x speedup.

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Interpolating spline based data smoothing

Though B-splines are the standard objects and tools both in the spline theory and in its application fields, for researchers the interpretation of the abstract control values as model coefficients presents an issue.

Based on a recently uncovered relationship for computation of the inverse of tridiagonal matrices, we derive an explicit matrix form for interpolating cubic splines, whose function value parameters are naturally interpreted. The technique, which is applicable for both uniform and nonuniform splines, is demonstrated by fitting and forecasting real data.