

数値線形代数 (保國 恵一)

Numerical linear algebra (MORIKUNI Keiichi)



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行列問題に対する数値解法

これまで行ってきた研究は、行列（数や記号や式などを縦と横に矩形状に配列したもの）を扱うものが多く、線形最小二乗問題、線形非適切問題、線形方程式、最適化問題、固有値問題に関するものです。主な興味は、このような問題に対する解法のアルゴリズム（算法）の設計、理論解析、およびその応用です。これらの基礎には線形代数、行列解析、数値計算があります。特に、理論的にも実用的にも扱いにくい特異な性質をもつ問題の解決に興味があります。

Numerical Methods for Matrix Problems

My studies have involved matrices (arrays of numbers, symbols, expressions, arranged in rows and columns) and include linear least squares problems, linear ill-posed problems, linear systems of equations, optimization problems, and eigenvalue problems. My main interests are on the design of numerical algorithms for these problems, their convergence and error analyses, and their applications. The underlying fundamentals are linear algebra, matrix analysis, and numerical computations. In particular, I'm interested in solving the singular cases which are regarded as difficult in theory and practice.

Selected publications

- Matsuda, M., Morikuni, K., and Sakurai, T., Spectral feature scaling method for supervised dimensionality reduction, Proceedings of the Twenty-Seventh International Joint Conference on Artificial Intelligence, pp. 2560–2566, 2018.
- Morikuni, K. and Rozložník, M., On GMRES for singular EP and GP systems, SIAM Journal on Matrix Analysis and Applications, 39(2), pp. 1033–1048, 2018.
- Morikuni, K. and Hayami, K., Convergence of inner-iteration GMRES methods for rank-deficient least squares problems, SIAM Journal on Matrix Analysis and Applications, 36(1), pp. 225–250, 2015.

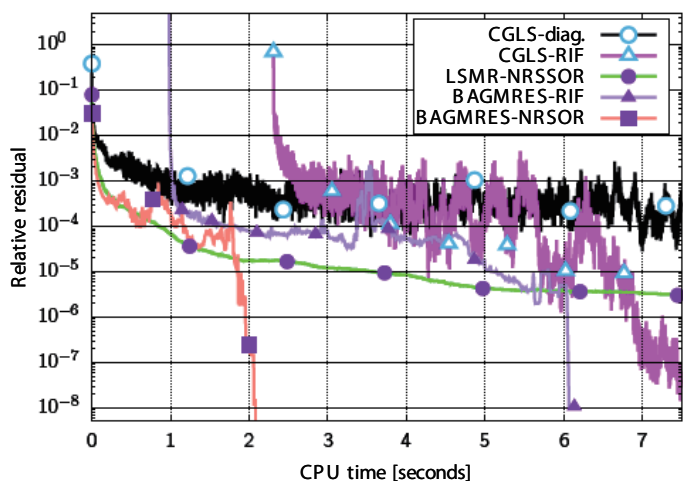


Fig. CPU time [second] versus relative residual