

## ADAPTIVE CROSS APPROXIMATION FOR ILL-POSED PROBLEMS

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Consider integral equations of the first kind with a smooth kernel and perturbed right-hand side, i.e. based on contaminated data. Discretization leads to linear systems of equations with singular values clustering near zero. The solution of these systems requires regularization damping or ignoring the small singular values.

Adaptive cross approximation (ACA) is an efficient way to use Gaussian elimination with rook pivoting to find low rank approximations to a given matrix. We will use ACA to approximate a small number of the largest singular values that are sufficient for an approximation of the solution.

Some of our results have been published in [1].

### References

- [1] T. Mach, L. Reichel, M. Van Barel, and R. Vandebril, *Adaptive cross approximation for ill-posed problems*, Journal of Computational and Applied Mathematics, 303 (2016), pp. 206–217.