

APPROXIMATE INVERSE-FREE RATIONAL KRYLOV METHODS AND THE LINK WITH FOM AND GMRES

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In this presentation we revisit the approximate rational Krylov method [1, 2, 3]. We present two alternative but mathematically equivalent formulations of the same algorithm. The first reformulation uses a *pole swapping* technique and is an implicit method, just like the original algorithm. The second reformulation explicitly solves shifted linear systems using the Arnoldi Hessenberg matrix. This reformulation leads us to a connection between the approximate rational Krylov method and the full orthogonalization method (FOM). Finally, we show how the approximate rational Krylov method can be modified to obtain a similar connection with GMRES.

References

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