ALGORITHMIC FAULT TOLERANCE USING THE LANCZOS METHOD

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Dedicated by Boley, Brent, and Luk, to their teacher
Gene Golub on the occasion of his 15th birthday.

In memory of Jeffrey Speiser

Abstract

We consider the problem of algorithm-based fault tolerance, and make two contributions. First, we show how very general sequences of polynomials can be used to generate the checksums, so as to reduce the chance of numerical overflows. Second, we show how the Lanczos process can be applied in the error location and correction steps, so as to save on the amount of work and to facilitate actual hardware implementation.

Comments

Only the Abstract is given here. The full paper appeared as [1].

References

1. D. L. Boley, R. P. Brent, G. H. Golub and F. T. Luk, "Error correction via the Lanczos process", *SIAM J. on Matrix Analysis* (Gene H. Golub birthday issue) 13 (1992), 312–332. rpb124.

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