The Effects of Soft Errors on Krylov Methods Including a Fault Tolerant Conjugate Gradient Algorithm (part 2)

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ABSTRACT. As architectures are developed with smaller components operating a lower voltages, soft errors (i.e., bit flips) become potentially worrying, and in fact may not even be detected. We investigate the sensitivity of several Krylov methods to soft errors. We apply sensitivity analysis techniques to assess the relative importance of algorithmic locations where the bit flips occur. We compare their effects on several Krylov methods including a new fault tolerant variant of the flexible CG algorithm.