

## **Considerations on efficient implementation of Anderson acceleration on parallel architectures**

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We are currently investigating ways of implementing Anderson acceleration efficiently on distributed-memory machines and accelerators such as GPUs. In this talk we discuss some early considerations. We tested two approaches to lowering the cost of the QR factorization kernel within the method. The first is a GMRES-like restarting procedure, and the second is a communication-avoiding QR factorization. Restarting was found to be less efficient than the current approach of in-place updating the factorization except in cases where the cost of the function evaluation was very small. We also found that the communication cost on problems using 1,000 processors or less was too small to justify use of communication-avoiding QR. We instead turn to local accelerators to speed up the on-node cost. We discuss our initial experience with implementing Anderson acceleration on GPUs.