CFD-based derivative-free optimization using polyharmonic splines, Part 2 DANIELE CAVAGLIERI, POORIYA BEYHAGHI, THOMAS BEWLEY, Flow Control Lab, UC San Diego — The derivative-free optimization algorithm developed in Part 1 of this work (see Beyhaghi et al.).is extended to include (a) a dynamic trade-off between local refinement and global exploration, and (b) to incorporate convex constraints of various types. The resulting algorithm is then verified on representative test functions and compared with competing algorithms. In particular, we will report on recent efforts to develop high-order low-storage IMEX RK schemes for the accurate time integration of the stiff ODEs arising in large-scale DNS and LES simulations.

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