1116-90-2892 **Aleksandr Y Aravkin** (sasha.aravkin@gmail.com), University of Washington, Applied Math, Seattle, WA 98195, **James V Burke*** (jvburke@uw.edu), Uiniversity of Washington, Math, Seattle, 98195, **Dmitriy Drusvyatskiy** (ddrusv@uw.edu), University of Washington, Math, Seattle, WA 98195, **Michael P Friedlander** (mpf@math.ucdavis.edu), University of California, Davis, Math, Davis, CA 95616, and **Scott Roy** (scott.michael.roy@gmail.com), University of Washington, Math, Seattle, WA 98195. *Optimal value function methods for numerical optimization.*

Convex optimization problems arising in applications often have favorable objective functions and complicated constraints, making first-order methods not immediately applicable. One approach is to exchange the objective and the constraint functions, leading to a parametric family of efficiently solvable optimization problems. A zero-finding procedure, based on inexact function evaluations and possibly inexact derivative information, leads to an approximate solution of the original problem. In this tslk, we take a fresh new look at this framework focusing on particular applications and the resulting iteration bounds. Properties of the value function and insensitivity of the method to conditioning of the underlying problem play an important role. Examples illustrate the results. (Received September 22, 2015)