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Varis Carey* (varis@ices.utexas.edu), TX , and **Robert Moser**. *Region of Influence Sensitivity Derivatives for Multiphysics Systems*. Preliminary report.

We present an algorithm for the computation of adjoint-based sensitivity derivatives of space-time localized quantities of interest(QoI), applicable to multiscale/multiphysics systems. The algorithm trades space-time storage of primal solution state for the solution of additional auxiliary adjoint problems, making this approach attractive for high-performance computing(HPC) architectures. We illustrate this approach on some simple model problems, as well as the computation of flame speed sensitivity to chemistry in combustion, (Received February 10, 2014)