

A Dynamic Data-Driven Application Simulation Framework *

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ABSTRACT

We describe, devise, and augment dynamic data-driven application simulations (DDDAS). DDDAS offers interesting computational and mathematically unsolved problems, such as, how do you analyze a generalized PDE when you do not know either where or what the boundary conditions are at any given moment in the simulation in advance? Only classical analysis works (sort of), but Sobolev theory definitely is missing. A summary of DDDAS features and why this is a really neat new field will be included in the talk. Two examples, contaminant tracking and wildfire modeling, will be used to motivate DDDAS.

Keywords: DDDAS, CFD, multiscale methods, automatic model changing, remote supercomputing and steering.

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