



Discrete Event Solution of Gas Dynamics within the DEVS Framework.

**Conference Paper** in Lecture Notes in Computer Science · June 2003

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#### Abstract

The DEVS (Discrete Event Systems Specification) formalism has been applied to continuous and discrete phenomena. The use of discrete events, rather than time steps, as a basis for simulation has been shown to reduce computation time by orders of magnitude in many applications. However, the application of DEVS to partial differential equation (pde) simulation has only recently been investigated. Here, in an application...

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*"...ggering an automatic upgrade in producer resolution model to meet the more demanding specification [8]. ..."*

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*"...The effect of this front tracking behavior can be significant. In [16] it is responsible for a speedup of 35 relative to a discrete time solution for Euler's equations in one spatial dimension. ..."*

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*"...To achieve this goal, activity tracking has been used in discrete-event driven simulations [3, 26, 27] as well as in discrete-time driven simulations [26, 28, 29]. In both approaches, errors introduced ..."*

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*"...ion) is found to exceed the minimum amount of information  $D_f$  (same as the "quantum" value in [26,27]). As we show below, this postulation leads to an algorithm where the accuracy of time integration ..."*

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*"...der of magnitude have been demonstrated when compared to the best available numerical packages [8, 9] (perhaps leading one major developer to seek integration of discrete event methods into their offeri..."*

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