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Constraint damping in the KST evolution system ROBERT OWEN, Caltech — Much effort in recent years has been directed toward expressing the evolution equations of general relativity in forms where constraint violations are dynamically damped away during the simulation. We will discuss a trick which naturally appears in the context of explicit first-order reductions of second-order evolution systems. This trick presents a simple means to modify the evolution of certain constraints, without altering hyperbolicity. As an example, we will discuss a generalization of the KST evolution systems, that damps away most constraints exponentially on a tunable timescale, and present results of its use in numerical simulations.

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