1023-83-1833 **Alexander Alekseenko*** (alexander.alekseenko@csun.edu), Department of Mathematics, California State University Northridge, 18111 Nordhoff St., Northridge, CA 91330-8313.

Well-Posed Initial-Boundary Value Constrained Evolution Problems.

In a formulation of Einstein's equations, the constraint equations are the ones that do not contain time derivatives. These equations are preserved in the exact evolution provided that both initial and boundary data are compatible, i.e., do not perturb the constraint equations. In most cases, the constraint-compatible (or constraint-preserving) boundary data is obtained by borrowing part of the boundary conditions for the dynamic equations and modifying it to enforce the constraints. However, by modifying the boundary conditions without consulting to the original problem which is a constrained evolution problem, we carry the risk of making the data ill-posed by, for example, losing physically interesting solutions or endangering stability of the system. We propose the method in which new examples of radiation-controlling constraint-preserving data are constructed basing on a well-posed initial-boundary value problem formulation for the original constrained evolution problem. The energy argument, Fourier-Laplace technique, and polynomial analysis are used to verify that the new boundary conditions are well-posed for the system. (Received September 26, 2006)