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*Numerical Bifurcation Analysis of a Coupled Elliptic System.*

The Einstein constraint equations are a coupled system of elliptic differential equations that, in general relativity, restrain the allowed choices of initial data. A major goal is the parameterization of all solutions to these equations. While each equation is individually well understood and well behaved, the coupled system is more complicated. When the mean curvature parameter (a function which will be the mean curvature of the initial data in the resulting spacetime) is constant or nearly constant, freely given seed data leads to a unique solution of the equations. However, when the mean curvature is far from constant, the equations can have multiple or no solutions. In this talk we will discuss our mostly numerical results showing nonuniqueness and nonexistence using the numerical bifurcation tool AUTO. (Received September 20, 2016)