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Joshua Faber* (jafsma@rit.edu), School of Mathematical Sciences, Center for Comput.
Relativity and Gravitation, Rochester Institute of Technology, Rochester, NY 14623. *Numerical
Techniques for Generating Initial Data in General Relativity.*

Generating initial data for numerical evolutions in general relativity typically requires the solution of several linked non-linear elliptic equations. Here, we discuss various domain decompositions and coordinate transformations that can be used to generate initial data representing neutron stars and black holes in binaries and more general configurations. Particular attention is paid to spectral approaches, and the ways they may be used to generate extremely accurate solutions to the constraint equations. (Received July 10, 2012)