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Evolution of the Einstein equations to future null infinity

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Given that gravitational radiation is only defined unambiguously at future null infinity $\mathcal{J}^+$, it is very desirable to include $\mathcal{J}^+$ in numerical evolutions of the Einstein equations. We choose to work directly with the Einstein equations (in an ADM-like reduction with elliptic gauge conditions) expressed in terms of a conformal metric. The resulting equations develop apparently singular terms at $\mathcal{J}^+$ that can nevertheless be evaluated in a regular way through an enforcement of the constraint equations. Stable numerical evolutions of a perturbed Schwarzschild black hole in axisymmetry have been obtained. We also show how matter can be included in our formalism and present numerical Einstein-matter evolutions in spherical symmetry.