Towards Wave Extraction in Numerical Relativity: Analytical Examples LIOR BURKO, Bates Coleege, THOMAS BAUMGARTE, Bowdoin College, CHRISTOPHER BEETLE, Florida Atlantic Univrsity — Beetle and Burko recently introduced a scalar curvature invariant for general relativity, that carries information about gravitational radiation in generic spacetimes, in cases where such radiation is incontrovertibly defined. Here, we find the Beetle-Burko scalar explicitly for a number of analytical examples (including Bowen-York initial data and linearized quadrupole waves). We discuss the insights into numerical relativity wave extraction that may be learned from these examples, in addition to analytical and scaling properties of the Beetle-Burko scalar. We argue that the Beetle-Burko scalar is an invaluable tool for wave extraction in numerical relativity, in addition to a means for estimating the wave content of initial data sets.

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