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Extracting physics from numerical spacetimes with constant-expansion surfaces ELOISA BENTIVEGNA, ERIK SCHNETTER, Louisiana State University, BADRI KRISHNAN, Albert Einstein Institute — Extracting unambiguous physical information from a spacetime has long been one of the central issues in General Relativity. Defining unique expressions that are generally covariant and have recognizable physical properties (e.g., obey conservation laws when the appropriate symmetries apply) has proven to be impossible without the introduction of further structure, such as coordinate conditions at null infinity or restrictions on the 2-surfaces to be used for gravitational wave extraction. Inspired by the successes of the Isolated and Dynamical Horizon framework, along with its practical effectiveness in numerical contexts, we discuss the use of general constant-expansion surfaces in the resolution of the ambiguities, and illustrate the results in a few cases of physical interest.

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