

Abstract Submitted
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Transition to matter dominance in expanding cosmological spacetimes containing gravitational waves BEVERLY K. BERGER, National Science Foundation — It has long been known that cosmological gravitational waves can play the role of an effective matter source to drive the dynamics of an average background spacetime. In vacuum, expanding, cosmological spacetimes, this effective gravitational-wave matter can yield surprising behavior. Examples include the new class of Gowdy T^3 solutions found by Ringström and the unusual “attractor” seen in generic T^2 -symmetric spacetimes. However, it is also well known that ordinary matter, dark matter, and/or dark energy will quickly dominate the gravitational-wave-effective matter in the dynamics of the expansion. The question then arises of the interplay between the unusual gravitational-wave-driven dynamics and the transition to matter or cosmological constant dominance. Numerical studies of this interplay during the transition will be presented.

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