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Expanding Cosmological Spacetimes Containing Gravitational Waves BEVERLY K. BERGER, National Science Foundation — Most analysis of expanding cosmologies focus on matter (exotic or otherwise) in a spatially homogeneous background although spatial inhomogeneities clearly exist. To examine the possible effects of these inhomogeneities on expanding cosmologies, models with 3-torus topology and spatial dependence only in one direction are considered. The behaviors of vacuum and fluid-filled cases are contrasted with the vacuum and fluid-filled anisotropic but spatially homogeneous Kasner models where it is known that the latter case approaches isotropy. The results of numerical simulations will be used to illustrate unusual behavior for vacuum spatially inhomogeneous models as well as their approach to the standard cosmology when matter dominates the dynamics.

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