

Abstract Submitted
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Finding Mixmaster Dynamics in Collapsing Cosmological Spacetimes BEVERLY K. BERGER, National Science Foundation — Numerical and analytic studies indicate that collapsing, generic cosmological spacetimes exhibit local Mixmaster dynamics, at least in part. At a heuristic level, the method of consistent potentials—seeing if local Kasner behavior is consistent—can make plausible the Mixmaster behavior. However, spacetimes with one, two, and three spatial symmetries that are known to exhibit local Mixmaster dynamics also appear to exhibit qualitatively different interactions when described by potentials in a natural set of variables. If one assumes, for example, that a Bianchi IX spatially homogeneous model is a special case of a $U(1)$ -symmetric spatially inhomogeneous model, transformations between the usual variables in each case yield predictions for new $U(1)$ dynamics that might be found in numerical simulations. However, generic T^2 -symmetric models do not appear to allow similar constructions within the standard Belinskii-Khalatnikov-Lifshitz time variable. While this has been described previously (see B.K. Berger, *Class. Quant. Grav.* **21** (2004) S81-S96 and references therein), some open questions remain. These will be explored and, perhaps, resolved.

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