

Abstract Submitted
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Chaos and Big-Bang singularity in Bianchi type-IX universe for the Einstein equation YUYA TAKEUCHI, Osaka Prefecture University, TOMIO PETROSKY, LINDA REICHL, The University of Texas at Austin, SATOSHI TANAKA, Osaka Prefecture University — Chaotic dynamics of a spatially homogeneous and anisotropic case in the Bianchi type-IX universe model for the Einstein equation has been studied for the vacuum case. There is a hyperbolic fixed point and a separatrix only for the type-IX model with positive cosmological constant. A difficulty in numerical analysis due to the Big-Bang singularity is avoided by constructing an analytical solution near the singular point. Thanks to the local analytic solution and by combining it with global numerical solution, we are able to construct Poincaré surface of a section near the separatrix. A new type of chaotic motion characteristics to the Einstein equation will be discussed.

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