



General Relativity and Quantum Cosmology

Smooth Gowdy symmetric generalized Taub-NUT solutions

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We study a class of S3 Gowdy vacuum models with a regular past Cauchy horizon which we call smooth Gowdy symmetric generalized Taub-NUT solutions. In particular, we prove existence of such solutions by formulating a singular initial value problem with asymptotic data on the past Cauchy horizon. The result of our investigations is that a future Cauchy horizon exists for generic asymptotic data. Moreover, we derive an explicit expression for the metric on the future Cauchy horizon in terms of the asymptotic data on the past horizon. This complements earlier results about S2xS1 Gowdy models.

Comments: 56 pages, 1 figure. The new version contains a detailed explanation of the Fuchsian method on the 2-sphere

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