

# Smooth Gowdy-symmetric generalised Taub-NUT solutions in Einstein-Maxwell theory

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**Abstract.** We introduce a new class of inhomogeneous cosmological models as solutions to the Einstein-Maxwell equations in electrovacuum. The new models can be considered to be nonlinear perturbations, through an electromagnetic field, of the previously studied “smooth Gowdy-symmetric generalised Taub-NUT solutions” in vacuum [1–4]. Utilising methods from soliton theory, we analyse the effects of the Maxwell field on global properties of the solutions [5]. In particular, we show existence of regular Cauchy horizons, and we investigate special singular cases in which curvature singularities form

## References

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