

COMMENT

Comment on ‘A cylindrically symmetric solution approaching Einstein universe’

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Abstract

This is a comment on the letter by Iftime (Iftime M D 2002 A cylindrically symmetric solution approaching Einstein universe *Class. Quantum Grav.* **19** L81).

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This is a comment on the letter by Iftime (Iftime M D 2002 A cylindrically symmetric solution approaching Einstein universe *Class. Quantum Grav.* **19** L81). The author claims to have ‘described’ a stationary cylindrically symmetric solution of Einstein’s equations with a positive cosmological constant and a dust source. In fact, he was not able to solve the resulting Einstein equations (in his words: ‘The system (18) does not have an explicit analytical solution . . .’), so he set out to ‘derive a good approximation of the solution’.

The truth is that the solution he sought was already found by Lanczos in 1924 [1] and recently reprinted in *General Relativity and Gravitation* in the ‘Golden Oldies’ series [2]. Also, the solution keeps coming up as a simple special case in numerous contexts; for example, see [3, 4]. The formulae for the metric are quite simple (see [2]), and the geometry and physics implied by this solution had been discussed in impressive detail by Lanczos himself.

References

- [1] Lanczos K 1924 *Z. Phys.* **21** 73
- [2] Lanczos K 1997 *Gen. Rel. Grav.* **29** 363
- [3] Krasinski A 1975 *J. Math. Phys.* **16** 125
- [4] Krasinski A 1998 *J. Math. Phys.* **39** 380