

## Kurt Gödel's theory of gravitation

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Gödel's contribution to GR [1] have been criticized by several first rank physicists like Chandrasekhar, R.Ellis, S.Hawking, R.Penrose, J.Wheeler [2]. These criticisms (lack of physical meaning, violation of causality,...) contrast with Gödel own description of his work: “[It] relates to the pure theory of gravitation published in 1916 which, I believe, was left, not only by Einstein himself but also by the whole generation of contemporary physicists, in its state of a torso, physically, mathematically, and with respect to its application in cosmology.” I will, in first place, explain why recurrent criticisms addressed to Gödel's exact solutions of Einstein's field equations are unjustified. In second place, I will illustrate in what sense Gödel's contributions to GR is what Einstein tried to do in 1917, namely a completion of the theory of gravitation.

### *References*

[1] Kurt Gödel, *Collected Works, Volumes I-V*, ed. S. Feferman et al., Oxford University Press, 1996-2004.

[2] C.W. Misner, K.S.Thorne, J.A.Wheeler, *Gravitation*, W.H.Freeman & Co, 1973.

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