

Abstract Submitted
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Wormhole geometries in fourth-order conformal Weyl gravity.¹

GABRIELE VARIESCHI, KELLIE AULT, Loyola Marymount University — We present an analysis of the classic wormhole geometries based on conformal Weyl gravity, rather than standard general relativity. The main characteristics of the resulting traversable wormholes remain the same as in the seminal study by Morris and Thorne, namely, that effective super-luminal motion is a viable consequence of the metric. Improving on previous work on the subject, we show that for particular choices of the shape and redshift functions, the wormhole metric in the context of conformal gravity does not violate the main energy conditions, as was the case of the original solutions. In particular, the resulting geometry does not require the use of exotic matter at or near the wormhole throat. Therefore, if fourth-order conformal Weyl gravity is a correct extension of general relativity, traversable wormholes might become a realistic solution for interstellar travel.

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