

Abstract Submitted  
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**Curved Backgrounds in Emergent Gravity**<sup>1</sup> YIYU ZHOU<sup>2</sup>, JOSHUA ERLICH<sup>3</sup>, SHIKHA CHAURASIA<sup>4</sup>, William Mary Coll — Field theories that are generally covariant but nongravitational at tree level typically give rise to an emergent gravitational interaction whose strength depends on a physical regulator. We consider emergent gravity models in which scalar fields assume the role of clock and rulers, addressing the problem of time in quantum gravity. We discuss the possibility of nontrivial dynamics for clock and ruler fields, and describe some of the consequences of the dynamics for the emergent gravitational theory.

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