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Conformal Loop quantization of gravity coupled to the standard model JORGE PULLIN, Louisiana State University, RODOLFO GAMBINI, Universidad de la Republica Oriental del Uruguay — We consider a local conformal invariant coupling of the standard model to gravity free of any dimensional parameter. The theory is formulated in order to have a quantized version that admits a spin network description at the kinematical level like that of loop quantum gravity. The Gauss constraint, the diffeomorphism constraint and the conformal constraint are automatically satisfied and the standard inner product of the spin-network basis still holds. The resulting theory has resemblances with the Bars-Steinhardt-Turok local conformal theory, except it admits a canonical quantization in terms of loops. By considering a gauge fixed version of the theory we show that the Standard model coupled to gravity is recovered and the Higgs boson acquires mass. This in turn induces via the standard mechanism masses for massive bosons, baryons and leptons..

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