Details of changes:

A referee provided the following informal comments:

"The paper has one very obvious weakness: the authors’ criterion for a theory of gravity is too weak. The criteria in the "rules of the game" section are essentially that one should have a massless spin two excitation in a local theory with a cut-off. But that's not enough -- the spin two field also has to couple universally to the stress-energy tensor of every field, including its own. Without that, the linearized gravity theory found here is sufficient in itself; there’s no need to bootstrap it up to the full nonlinear theory, or to have any sources at all."

The issue that the helicity 2 modes has to couple to the stress-energy tensor of its own is very important. In the revised paper, we added the following paragraph:

"Our lattice model also generates interactions between low energy gravitons. Those interactions are different from those generated by the higher order non-linear terms in the Einstein gravity. However, the higher order non-linear terms from the Einstein gravity are irrelevant at low energies and not universal. Thus it should be possible to generate those higher order terms by fine tuning our lattice model. So the local bosonic model should be capable of generating the non-linear terms in the Einstein gravity."

We made some other minor changes to shorten the paper. We are currently working on a long paper to discuss in detail the universal coupling to energy-momentum tensor of matter and gravity. This paper is limited to pure gravity without matter.

We would like point out that our criterion for a theory of gravity is not too weak, although it is weaker than the full non-linear gravity. It is this weaker criterion that allows us to make progress. We divide the problem of producing full non-linear gravity into two easier steps (1) producing linear gravity (2) fine tuning the lattice model to produce non-linear gravity. The hard key step is the first step which is done in this paper. Fine tuning the
lattice model to produce non-universal non-linear terms will be done in a coming long paper. This step is complicated but should be straightforward.

Since even producing linear quantum gravity from a finite lattice model is highly non-trivial, we feel that the paper deserves to be published in PRL.