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This is a report on the PhD Thesis of Marcin Kisielowski.

Marcin Kisielowski is a young brilliant scientist who has contributed substantially to the latest developments in quantum gravity. The excellence of his work is nicely reflected in this Thesis, which is of high scientific quality, comprehensive and well written.

The Thesis gives a detailed and coherent introduction to the present state of the covariant version of loop quantum gravity. A remarkable number of new important results obtained by Kisielowski, in collaboration with other members of his research group, are then described in details. Among these:

- (i) The key generalisation of the quantum gravity amplitudes from triangulations to a large class of two complexes, a key step that has opened the way to several applications of the theory.
- (ii) The proof of the injectivity of the EPRL map, previously only conjectured.
- (iii) The full development of the operator formalism for the spinfoam amplitudes.
- (iv) A number of key results in the application of the theory to cosmology.

This is a very solid list of results, which have pushed ahead our understanding of quantum gravity.

The thesis is written with great clarity, demonstrating a very good command of the topic. It confirms, once more, the top quality of the Warsaw school, which is among the very best worldwide.

I have no doubts, on the basis of this Thesis, in recommending that Marcin Kisielowski is granted the title of PhD.

Professor Carlo Rovelli