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Antonia Zipfel: Solving the Euclidean Scalar Constraints by Spin-Foam Methods

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It is often emphasized that spin-foam models could realize a projection on the physical Hilbert space of canonical Loop Quantum Gravity in the spirit of a rigging map construction. If this is indeed the case then the constraints have to vanish in the physical scalar product defined through spin-foams. We analyze the one-vertex expansion of a simple Euclidean spin-foam and find that it annihilates the Euclidean Hamiltonian constraint of canonical Loop Quantum Gravity in 4d. However, the states constructed are special and closely related to BF-theory.