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Lattice QFT on Curved Spacetime for CFT and BSM

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Lattices on Spherical Manifolds or on the cylindrical boundary of Anti-de-Sitter space have the potential to explore non-perturbative conformal or near conformal gauge theories for BSM studies for composite Higgs or Dark Matter. We report on progress in the use of **Quantum Finite Elements (QFE)** to address renormalization on maximally symmetric spherical simplicial manifolds. The simplicial Lagrangians for scalar, Fermionic and gauge fields are found and high precision test of counter term to restore exact isometries for the 2d and 3d Ising CFT are presented. The challenges in extend **QFE** software to high perfomance for 4d Gauge theories on R x S3 are discussed.

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