Numerical techniques to improve lattice QCD calculations
SUMAN BARAL, WALTER WILCOX, Baylor University — I will be talking about
numerical techniques which improve lattice QCD disconnected loop calculations. We
use an evaluation technique where the lattice matrix is projected over the multiple
noises to obtain solution vectors. This is done with linear equation solvers like
GMRES-DR (Generalized Minimum RESidual algorithm-Deflated and Restarted)
for the first noise, and GMRES-Proj (similar algorithm projected over eigenvectors)
for remaining noises. Noise subtraction methods that we are working on deflate out
eigenvectors and fit a polynomial to the quark propagator to speed up calculations.
A combination of deflation and polynomial methods gives the best results so far.

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