**New Noise Subtraction Methods in Lattice QCD** SUMAN BARAL,
WALTER WILCOX, Baylor University — Lattice QCD calculations of quark loop
operators are extremely time-consuming to evaluate. To calculate these diagrams
we use stochastic noise methods, which employ a randomly generated set of noise
vectors to project out physical signals. 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. In this context, we are attempting to employ matrix deflation
algorithms to reduce statistical uncertainty in these time-consuming lattice calcula-
tions. In addition, we are developing noise suppression algorithms using polynomial
subtraction techniques, as well as combining deflation and polynomial methods in
an original way.

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