

# **IMPROVING POLYNOMIAL-FILTERED HYBRID MONTE CARLO WITH HASENBUSCH**

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The most widely used method for generating Lattice QCD configurations is Hybrid Monte Carlo (HMC). In order to speed up this generation, a wide range of preconditioning techniques that modify the lattice action have been devised. This work compares the performance of the well-known Hasenbusch preconditioning technique with the polynomial filtering technique on a small  $16^3 \times 32$  lattice with two flavours of Wilson fermions at a pion mass  $M_\pi \sim 400$  MeV. We explore a novel method of combining polynomial and Hasenbusch filters, revealing a speedup when compared to the standard two Hasenbusch filters. This comes with the added advantage of simplified tuning.