A (P)HMC algorithm for $N_F = 2 + 1 + 1$ flavours of twisted mass fermions

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Abstract: We present a (P)HMC algorithm for $N_F = 2+1+1$ flavours of Wilson twisted mass fermions, which retain even/odd and mass-shift preconditioning for both, the degenerate light, u and d quarks, and the non-degenerate heavy, s and c quarks. We derive the explicit form of the equations of motion when employing a polynomial approximation for the "inverse of the lattice Dirac operator" and describe how to generate the correct pseudo-fermion heatbath step for this situation.