

Simulation of dynamical (u,d,s,c) domain-wall/overlap quarks at the physical point

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We perform hybrid Monte-Carlo simulation of $N_f = 2 + 1 + 1$ lattice QCD with domain-wall/overlap quarks at the physical point. The simulation is carried out on a 64^4 lattice with lattice spacing $a \sim 0.06$ fm, using the Nvidia DGX-1 (8 Volta GPUs interconnected by the NVLink). To attain the maximal chiral symmetry for a finite extent ($N_s = 16$) in the fifth dimension, we use the optimal domain-wall fermion for the quark action, together with the exact one-flavor action for domain-wall fermion. We outline the salient features of our simulation (e.g., without topology freezing, small residual masses, etc.), and present our preliminary results of the mass spectra of mesons and baryons.

Primary author: Prof. CHIU, Ting-Wai (National Taiwan University)

Presenter: Prof. CHIU, Ting-Wai (National Taiwan University)

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