Testing Fermion Actions: Scaling in the Schwinger Model

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Abstract: We discuss the scaling behaviour of different fermion actions in the 2dimensional massive Schwinger model. We have chosen the Wilson, hypercube, twisted mass and the overlap fermion actions. As physical observables, the pion mass, the singlet mass and the scalar condensate are computed for the above mentioned actions at a number of coupling values and quark masses. We discuss ideas to perform dynamical overlap simulations that avoid problems with the smallest eigenvalues of the overlap kernel by using reweighting techniques.