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The Slab Method to Measure the Topological Susceptibility

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In simulations of a model with topological sectors, algorithms which proceed in small update steps tend to get stuck in one sector, especially on fine lattices. This distorts the numerical results; in particular it is not straightforward to measure the topological susceptibility χ_t .

Here we test a method to measure χ_t even if configurations from only one sector are available. It is based on the topological charges in sub-volumes, which we denote as “slabs”. Under suitable circumstances, this enables the evaluation of χ_t , as we demonstrate with numerical data for non-linear sigma-models and 2-flavor QCD.

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