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On the determination of the strong QCD coupling at the Z-pole with new gradient-flow based beta-function

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Recently we introduced a new gradient flow based beta-function which is defined over infinite Euclidean space-time to calculate and integrate infinitesimal scale changes in RG flows. It can be applied in high-precision determination of the strong coupling at the Z-pole in QCD. In this talk we will discuss the results and challenges of the method applied to quenched QCD (pure Yang-Mill theory) as a pilot test for application to full QCD.

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