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## The $N_f=3$ gradient flow coupling running from 4GeV to 200MeV

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A fundamental step in the ALPHA collaboration efforts to determine the fundamental parameters of  $N_f = 3$  QCD at the electroweak scale in terms of hadronic quantities is the connection of an intermediate scale  $\sim 4\text{GeV}$  with a hadronic scale. In this talk we will show that using the Gradient Flow running coupling this task can be achieved with a very high precision. Our analysis will pay special attention to the continuum limit of flow quantities and reach a precision below 2% in the scale factor for a change of the coupling from  $g^2 = 13$  to  $g^2 = 2.5$ .

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