



Contribution ID: 119

Type: **Talk**

The leading hadronic contribution to γ - Z mixing

Wednesday, 15 July 2015 15:00 (20 minutes)

We study the hadronic contribution to the γ - Z mixing, which determines the leading order hadronic contribution to the running of the electroweak mixing angle θ_W . The required vacuum polarization function $\Pi^{\gamma Z}$ is calculated from the appropriate vector correlation functions in a mixed time-momentum representation. We explicitly calculate the connected and the disconnected contributions to such vector correlators using $N_f = 2$ dynamical flavors of non-perturbatively $O(a)$ -improved Wilson fermions.

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Session Classification: Standard Model Parameters and Renormalization

Track Classification: Standard Model Parameters and Renormalization