

Issues for $\sin^2\theta_W$ from A_{FB}

- PDF issues:
 - Relative initial state flavour content: $u\bar{u}$ vs $d\bar{d}$
 - Sea contribution, and dilution: $Q(x_1)Q\bar{q}(x_2)$ vs $Q\bar{q}(x_1)Q(x_2)$, $Q=u,d,s,c, \dots$
 - qg initial states (\Rightarrow change Z polarization, A_{FB})
- EW issues:
 - A_{FB} at the Z^0 peak vs off-peak: availability of NLO EW corrections for all relevant processes
 - Z/γ interference
 - EW corrections to QCD 1-loop (needed to consistently account for qg initial states)
- Final-state modeling, acceptance/efficiency systematics:
 - finite p_T and η acceptance, impact on A_{FB} extraction: suitable MCs available?
- Assessment of complementarity/impact of central/fwd lepton acceptance in ATLAS/CMS vs fwd/fwd at LHCb
- Possible way of parameterizing the impact of all the above (and more):
 - $\partial A_{FB}^{\text{exp}}/\partial \text{param} \pm \text{syst}$, for $\text{param}=\text{PDF, NLO corrections, EW/QCD interference, etc.}$
- In parallel, assessment of sensitivity to new physics (i.e. effects larger than current uncertainty on $\sin^2\theta_W$)