



W mass workshop

Fermilab, October 4th-5th



Original motivations



discussion of:

- the different sources of theoretical uncertainties
QCD, EW, QCDxEW
- the experimental procedure
calibration of the theoretical tools used in the analysis

attempt to estimate:

- the systematic error of theoretical origin
- the impact of different classes of theoretical corrections on MW
(and their availability in the simulation codes)

Theoretical corrections



different kinds of problems:

- higher order effects are available in one or more codes, they improve the theoretical prediction they should be validated and included in the analysis, at least if their impact is relevant for the final 15 MeV accuracy goal
- ambiguities of the theoretical predictions could only be fixed with unavailable 2-loop calculations their effect on MW can be estimated and included as a theoretical systematic
- many Drell-Yan observables are sensitive to non-perturbative effects which can only be modeled the model dependence is correlated with:
 - the perturbative predictions
 - the experimental procedure to tune the the simulation codes

The Milano wish-list



- **General**

- data format n-tuples
- discussion of systematic uncertainties as quoted in the exp papers

- **EW corrections**

- tuned comparisons of EW MC codes
- effect of a lost fermion pair
- validation of the multiple photon emission
- effects of EW scheme uncertainty
- parametric dependence on the input parameters / W -width treatment

- **QCD corrections**

- effect of missing NNLO-QCD terms
- effect of different resummation prescriptions, threshold resummation, $q_t(Z)$ broadening
- PDF uncertainties on the $q_t(W)/q_t(Z)$ ratio
- PDF with joint q_t -resummation
- uncertainties in PDFs with QED evolution

- **QCD x EW corrections**

- impact of different combination prescription, of different QCD-resummation techniques on the EW corrections