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Sessione 2: Calcoli esatti ad ordine fissato

Today

1. LO order calculations and event generators \Rightarrow Fabio Maltoni **th**
2. Perturbative calculations/MC beyond LO \Rightarrow Carlo Oleari **th**
3. Complete results for six-fermion physics with dedicated tools and strict interaction th-exp \Rightarrow Ezio Maina **th**
4. How are used fixed order Monte Carlo event generators at Tevatron CDF/D0 \Rightarrow Andrea Messina **exp**
5. Prospects for LHC \Rightarrow Patrizia Azzi **exp**
6. PDF \Rightarrow Alessandro Tricoli **exp**

How to organize the work for the rest of the Workshop?

with in mind the following requirements:

- originality, not only an assessment of the state of the art
- interest for both theorists and experimentalists

Proposal

Identify few relevant processes satisfying the following requirements:

- still new work on the theory and/or experimental side
- skills on these processes among italian teams (italian workshop)
- possibly minimum overlap with other sessions

Organize subgroups which treat the problem from the parton level simulation at best of our knowledge to the (fast?) detector simulation

Suggestions and criticism are welcome!

- Drell-Yan processes $pp \rightarrow W \rightarrow l\bar{\nu}_l$,
 $pp \rightarrow Z \rightarrow l^+l^-$

1. important for SM studies, PDF determination and new physics

2. what available theoretically

- (a) QCD corrections implemented at NLO in event generators

MCatNLO, S. Frixione, B. Webber

- (b) NNLO QCD calculations for inclusive cross sections and p_T distribution

(no final state spin correlations)

Anastasiou et al., hep-ph/0312266

- (c) EW corrections available and implemented in event generators

HORACE, C.M. Carloni Calame et al.

- (d) Higher order QCD corrections available in the form of CKKW matching

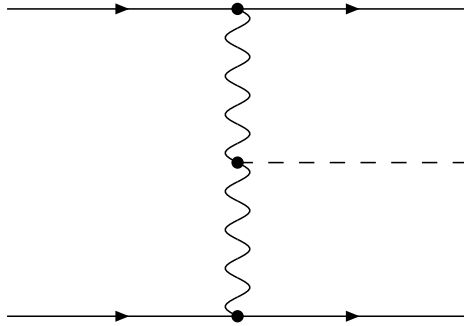
e.g. ALPGEN, M.L. Mangano et al.

- (e) preliminary study of mixed QCD/EW corrections

Q.-H. Cao and C.P. Yuan, Phys. Rev. Lett **93** (2004) 042001

3. Could we study systematically the impact of mixed QCD/EW corrections including detector effects?

- Higgs production in $pp \rightarrow H +$ forward jets

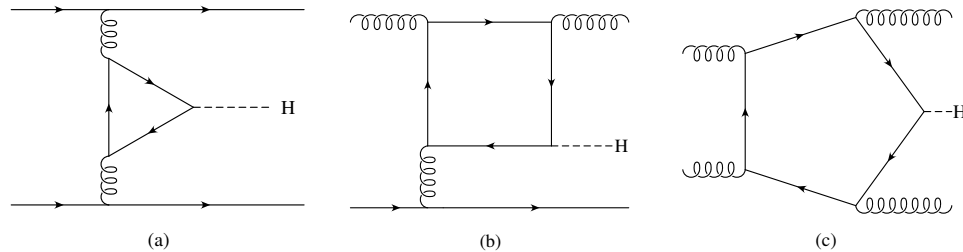


- relevant for

1. low mass region searches

2. Higgs properties measurements

Important signal/background



V. Del Duca et al., *Phys. Rev. Lett.* 87 (2001) 122001

- To our knowledge not yet included in experimental analysis
- the matrix element $m_t \rightarrow \infty$ implemented now in ALPGEN v2.0
- preliminary results on interface of partonic predictions with shower in collaboration with ALPGEN team, V. Del Duca and D. Zeppenfeld
- NLO calculation in progress

K. Ellis, W. Giele and G. Zanderighi

Could we try to make a complete study up to the detector level?