Hungary

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LHCphen()net

Outline

- Role within Phenonet
- Topics
- People
- Publications
- Plans

Role in Phenonet

Table 1: Recruitment Gantt chart



Network Partners	Recruited Researcher	-	1	12		2	4		3	6		4	18
5 - Hungary	ESR5.1												
	ER5												

Table 3: List of milestones



Milestone Milestone number name		WP	Teams involved	Linked project result					
M1.2	Tops + n jets	WP1	1,2,3,4,5,6, 7,9,10,11	Perturbative corrections to top-quark production (single-top and pairs) associated with n=0,,2 jets					
M3.3	Parton level Monte Carlos	WP3	1,2,3,4,5,6, 7,9,10,11	Release of code for experimental use hard parton cross sections of WP1					

Table 8: Network wide events

Month	Event	Location	Length (days)	Expected number of participants	Expected non-network attendants		
44	Summer School	Debrecen	10	70	20		

Topics

WP1, M1.2: Tops and jets

success: 7 final states implemented in PowHel (NLO predictions matched with SMC, see my talk on Thursday):

$$\sqrt{+}$$
 T and WWbB
 $\sqrt{+}$ T + Z
 $\sqrt{+}$ T + H/A
 $\sqrt{+}$ T + j
 $\sqrt{+}$ T + W

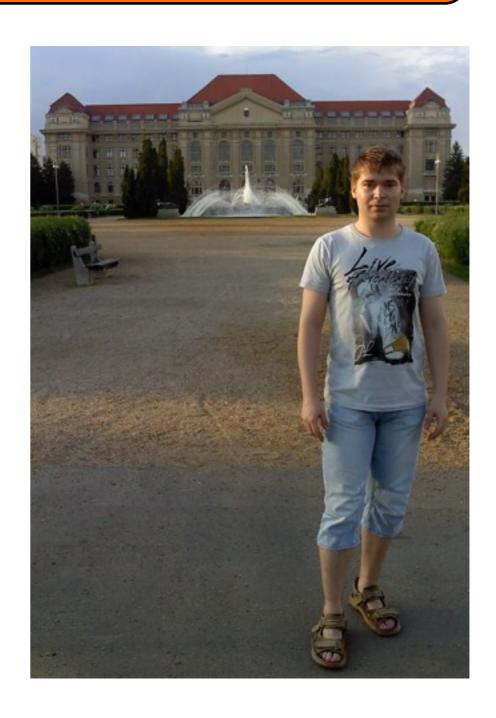
WP3, M3.3: Partonic MC at NNLO

- in progress: development of a general subtraction scheme for computing NNLO corrections
 - √ scheme defined
 - ✓ all subtraction terms are integrated
 - √ to be done: partonic MC (with ESR)

People

Roman Derco (ESR)

- in WP3 M3.3
- MSc in Prague
- New doctoral student
- Partonic MC at NNLO
- First: 3 months of internship at Wolfram starting next week



Maria Vittoria Garzelli (postdoc)

- in WP1 M1.2
- now in Nova Gorica
- Thadroproduction in association with bosons
- 6 publications within LHCPhenonet



Adam Kardos (PhD student)

- in WP1 M1.2
- defend his theses in November
- Thadroproduction in association with bosons
- ▶ 10 publications within LHCPhenonet
- move to Milan in December (ESR)



Damiano Tommasini (ESR)

- in WP3 M3.3
- moved from Firenze (Higgs-production at NNLO)
- was an ESR in Zürich
- partonic MC at NNLO



Publications

- 1. <u>t tbar W and t tbar Z Hadroproduction at NLO accuracy in QCD with Parton Shower and Hadronization effects.</u> [arXiv:1208.2665]
- 2. <u>Handbook of LHC Higgs Cross Sections: 2. Differential Distributions.</u> CERN-2012-002 [arXiv:1201.3084]
- 3. Z0 boson production in association with a top anti-top pair at NLO accuracy with parton shower effects.

 Phys.Rev. D85 (2012) 074022 [arXiv:1111.1444]
- 4. NLO Event Samples for the LHC.
 PoS EPS-HEP2011 (2011) 282 [arXiv:1111.1446]
- 5. Top quark pair production in association with a Z-boson at NLO accuracy. Phys.Rev. D85 (2012) 054015 [arXiv:1111.0610]
- 6. <u>Helac-nlo.</u> [arXiv:1110.1499]
- 7. Standard Model Higgs boson production in association with a top anti-top pair at NLO with parton showering.
 - Europhys.Lett. 96 (2011) 11001 [arXiv:1108.0387]
- 8. Top quark pair production in association with a jet with NLO parton showering.
 - Phys.Lett. B705 (2011) 76-81 [arXiv:1101.2672]
- 9. A subtraction scheme for computing QCD jet cross sections at NNLO: integrating the iterated singly-unresolved subtraction terms.

 JHEP 1101 (2011) 059 [arXiv:1011.1909]

Plans

- concentrate mainly on WP3 M3.3
- hire one ER next year
- organize a school (jointly with yearly Hungarian Particle Physics school) in about two years