Dijets background to the diffractive Higgs production in pp->pHp, H->bbbar

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Previous background estimations

A. De Roeck et al, hep-ph/0207042

Method: analytical

Background channels:

	B/S:
$gg^{PP} \to gg$	0.06
$gg^{PP} \to b\bar{b}$	0.06+0.08
$gg^{PP} \to b\bar{b}g$	0.06
$gg^{PP} \to b\bar{b}gg$	~0

S/B~3

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pp-tagging: 60%

bb-tagging: 60%

$\Delta M/M = 1\%$

$\Delta\eta$:50%

$\sigma(pp \to pHp) \sim 3fb$

BR(H(120)->bb): 0.67

L=30fb-1

11 signal and 4 background

$$\frac{S}{\sqrt{S+B}} \sim 3\sigma$$

Previous background estimations

M.Boonekamp et al, hep-ph/0406061

Generator: DPEMC (hep-ph/0312773)
based on Bialas-Landshof model + rapidity gap survival probability

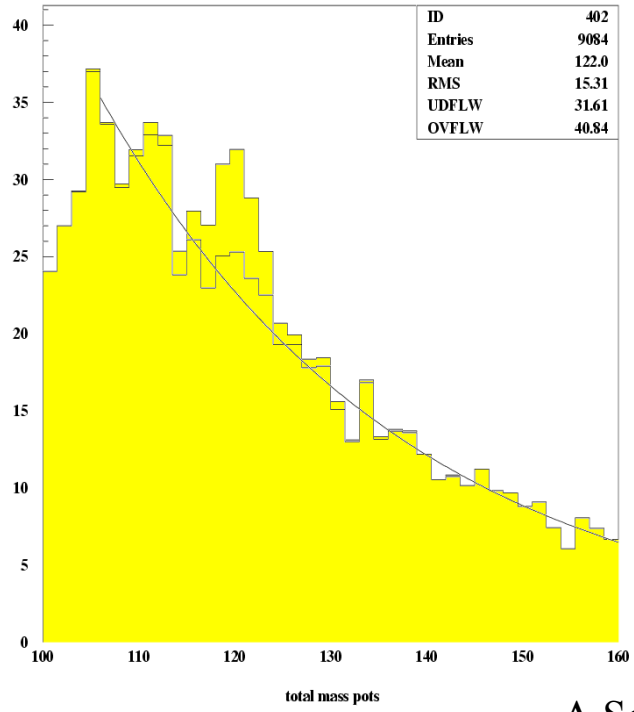
Background channels:
- non-diffractive dijets
- inclusive DPE dijets (qq, gg)
- exclusive DPE dijets (qq, gg)

$\sigma(pp \to pH(120GeV)p) \sim 2.3fb$

Fast MC for CMS (CMSIM ?)

protons tagging by 3RPs at210,308,420m
Ej1>45GeV, Ej2>30GeV

$|\eta_j|<2.5$, $|\Delta\eta_{jj}|<0.8$, $170<\Delta\phi_{jj}<190$
Mjj/Mall>0.75, Mjj/Mpp>0.8



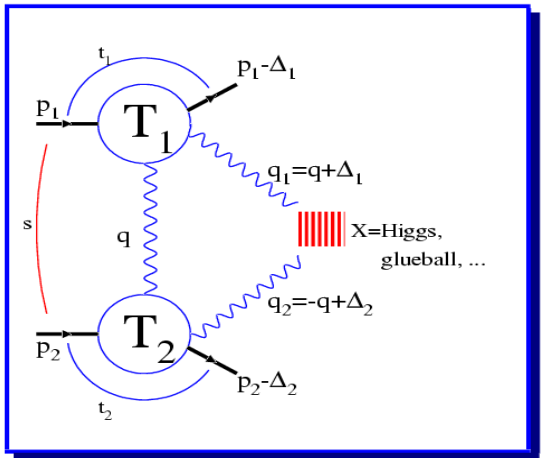
L=100fb-1, σM=2.5GeV, ΔM=4GeV
20 signal

S/B~0.5

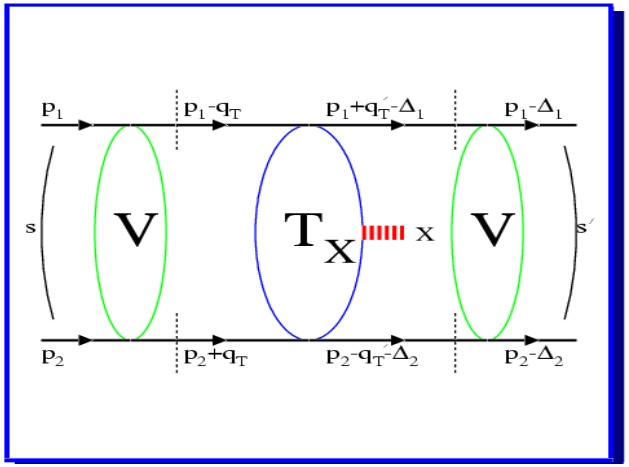
EDDE generator (hep-ph/0409180)

Theory: Regge-eikonal approach by Petrov and Ryutin(hep-ph/0311024)

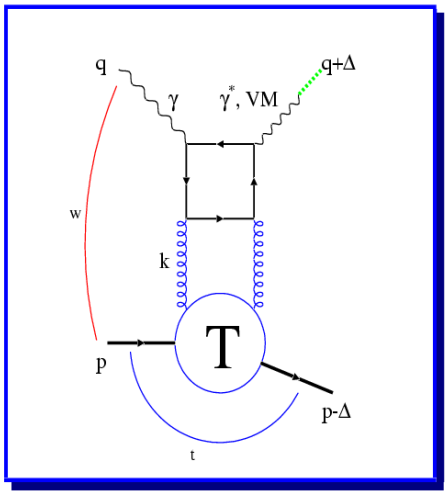
Amplitude T_X for the EDDE.



Absorbtive corrections.



HERA



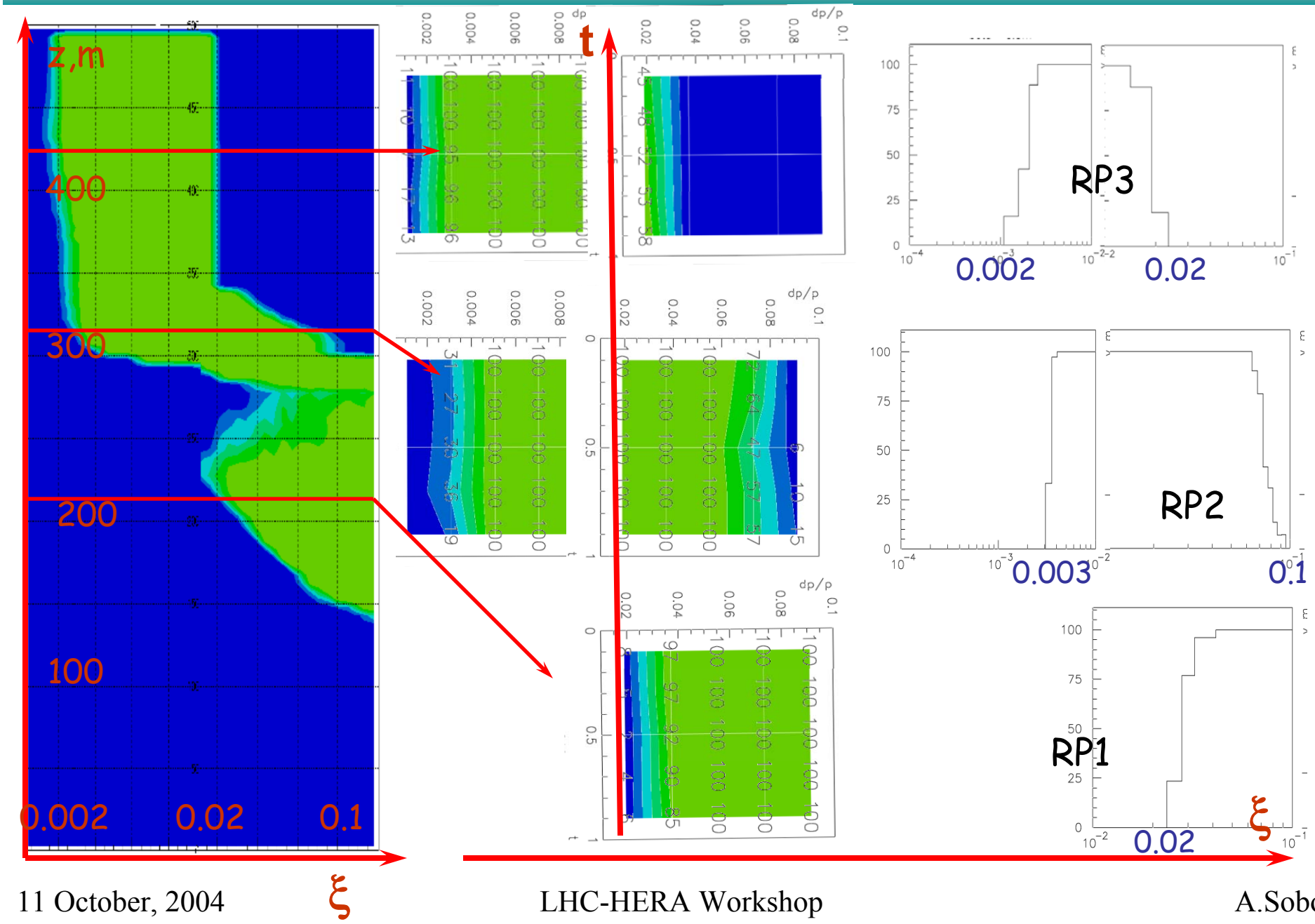
c_{gp}	M_H (GeV)	$\sigma_{p+p\to p+H+p}$ (fb)			
		LHC		TeVatron	
		no Sud. suppr.	Sud. suppr.	no Sud. suppr.	Sud. suppr.
3.5	100 → 500	110 → 57	4.6 → 0.14	12 → 0.4	0.5 → 0.001
2.3(3.3)	100 → 500	20 → 11	**3.6 → 0.11**	2.2 → 0.08	0.4 → 0.0009

exclusive DPE Higgs: σ~1.94fb at M>120GeV

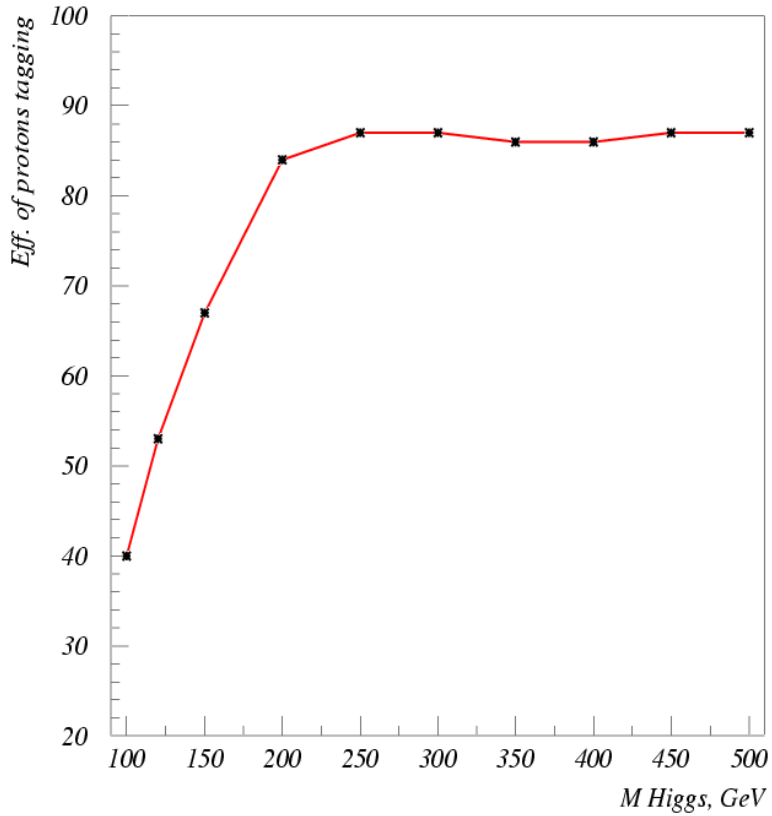
exclusive DPE bb dijets: σ~142fb at Et>25GeV

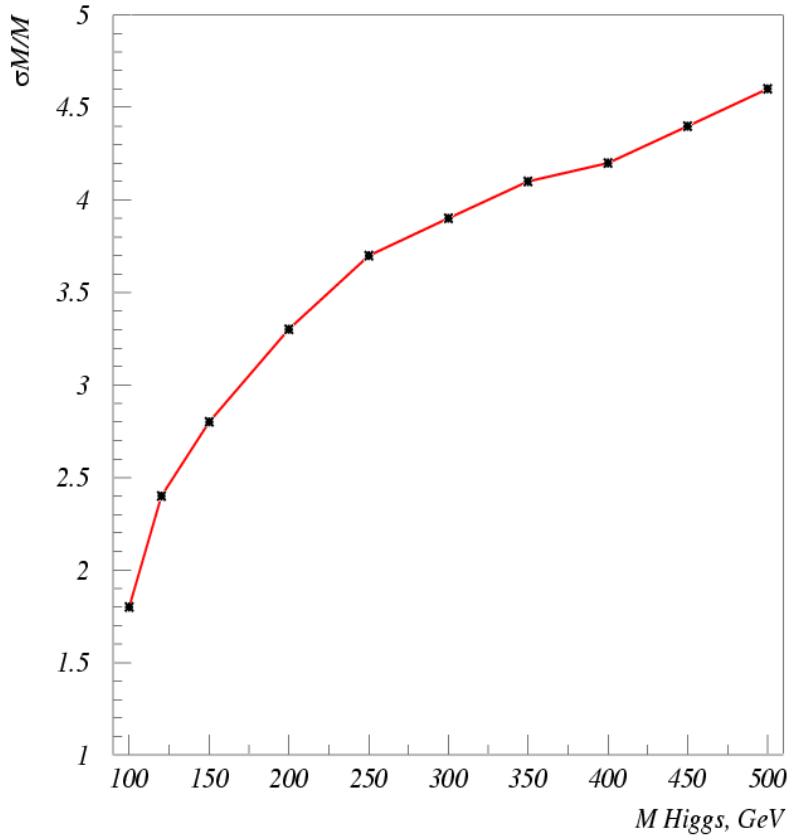
exclusive DPE gg dijets: σ~152pb at Et>25GeV

Protons tagging by 3RPs at 210, 308 and 420 m



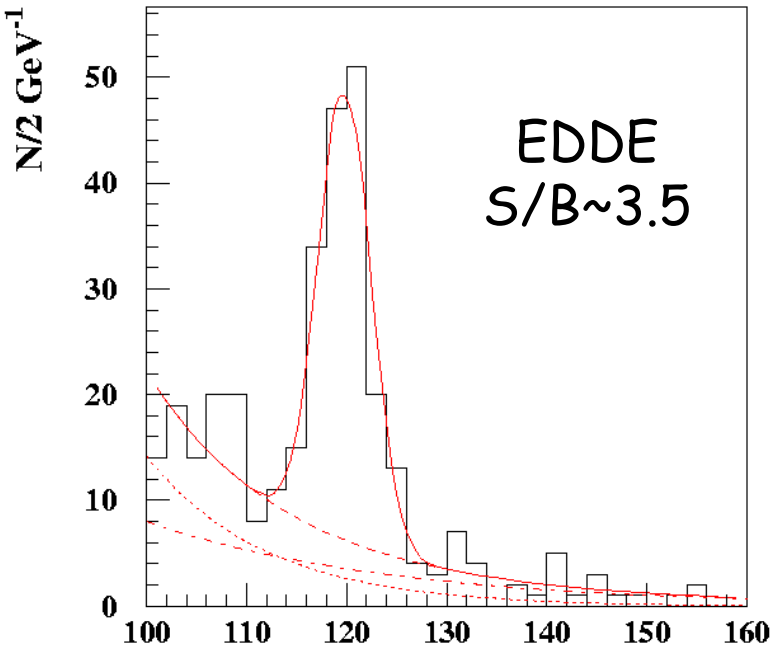
Protons tagging by 3RPs at 210, 308 and 420 m





Dijet background by EDDE and DPEMC

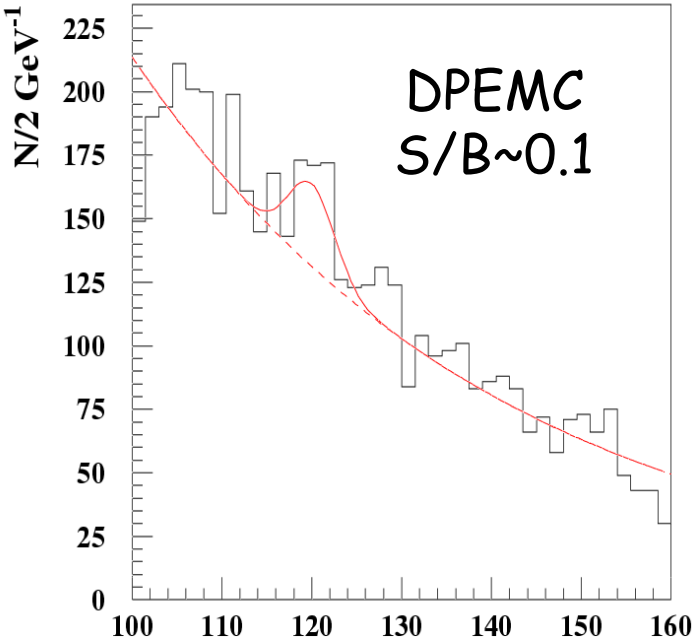
	Et>25GeV	100<M<160	bb tagging	Selections	N, 100 fb-1 114<M<126 GeV
Higgs (EDDE)	1.94fb	1.94fb	0.7fb	0.14fb	14
bb,exc,(EDDE)	142fb	2.55fb	0.92fb	0.1fb	2.6
gg,exc,(EDDE)	152pb	9pb	0.9fb	0.08fb	1.8
Dijets,exc.,DPEMC	3.4*10^3pb	820pb	82fb	4.7fb	115
Dijets,inc.,DPEMC	2.2*10^5pb	58000pb	5.8fb	1.4fb	15



L=100fb-1

σM=2.5GeV

ΔM=6GeV



Conclusion

The main reason of the difference between

A. De Roeck et al, hep-ph/0207042

and

M.Boonekamp et al, hep-ph/0406061

is the big divergences in the cross-sections of the exclusive dijet production:

	DPEMC	EDDE	KMR hep-ph/0111078
Exclusive dijets, 25<Pt<35 GeV	2130pb	120pb	60pb