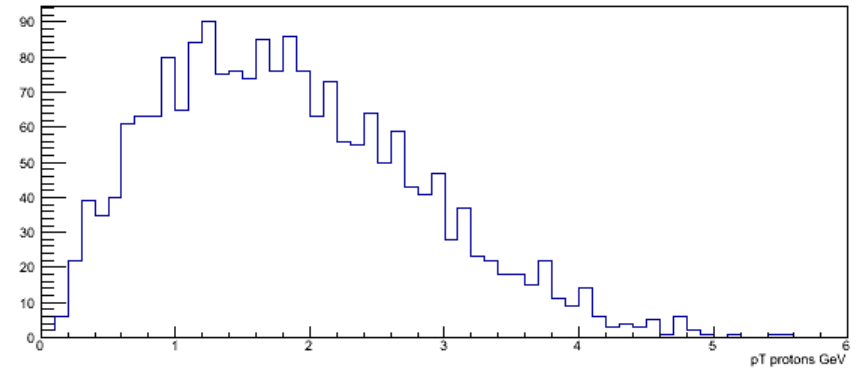
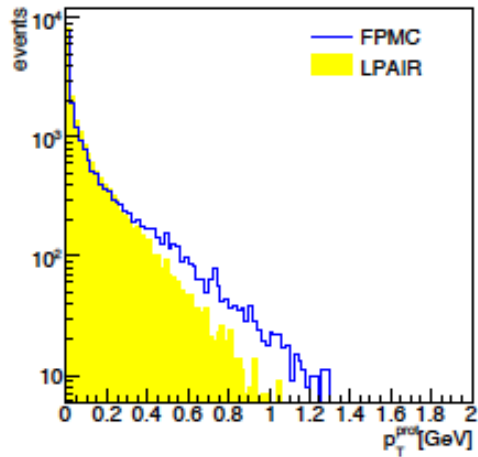
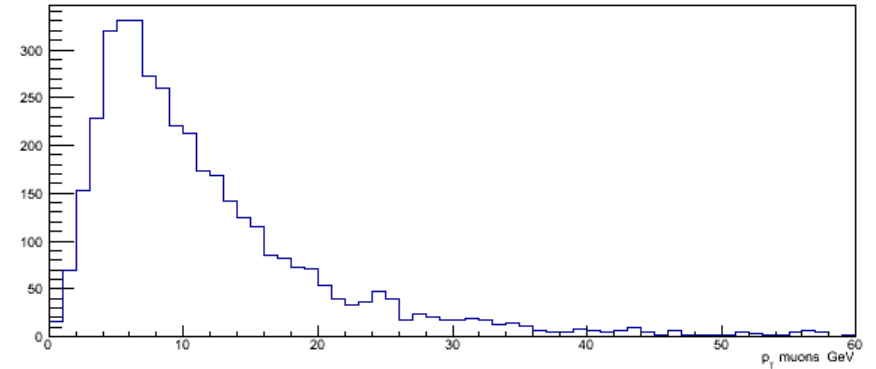
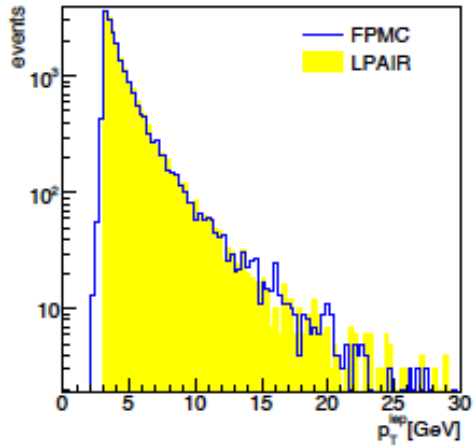


The proton p_T feature

- Study $\gamma\gamma\mu\mu$ in order to compare the proton p_T spectrum (or t) with Kepka's thesis
- Generated samples with various p_T muon cuts

Leptons and protons p_T



Lhe file and FPMC Herwig output

```

<event>
4   1  0.11270692E-02  0.10000000E+01  0.72992998E-02  0.22516400E+00
   22 -1  0  0  0  0  0.46654747E+00  0.78703771E+00  0.27205073E+02  0.27205008E+02  -0.91492891E+00  0. 9.
   22 -1  0  0  0  0 -0.67513611E+00 -0.56015293E-01 -0.97674117E+01  0.97673764E+01 -0.67745589E+00  0. 9.
   13  1  1  2  0  0  0.39757913E+01 -0.52750434E+00  0.26557717E+02  0.26859052E+02  0.10566000E+00  0. 9.
  -13  1  1  2  0  0 -0.41843799E+01  0.12585268E+01 -0.91200557E+01  0.10113333E+02  0.10566000E+00  0. 9.
</event>

```

---HARD SUBPROCESS---

IHEP	ID	IDPDG	IST	MO1	MO2	DA1	DA2	P-X	P-Y	P-Z	ENERGY	MASS	V-X	V-Y	V-Z	V-C*T
8	GAMMA	22 121	10	8	13	8	0.47	0.79	27.2	27.2	-0.91	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
9	GAMMA	22 122	10	9	14	9	-0.68	-0.06	-9.8	9.8	-0.68	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
10	HARD	0 120	8	9	11	12	-0.21	0.73	17.4	37.0	32.59	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
11	MU-	13 123	10	12	15	12	3.98	-0.53	26.6	26.9	0.11	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
12	MU+	-13 124	10	11	16	11	-4.18	1.26	-9.1	10.1	0.11	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
13	GAMMA	22 3	8	10	0	0	0.47	0.79	27.2	27.2	-0.91	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
14	GAMMA	22 3	9	10	0	0	-0.68	-0.06	-9.8	9.8	-0.68	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
15	MU-	13 1	11	10	0	0	3.98	-0.53	26.6	26.9	0.11	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
16	MU+	-13 1	12	10	0	0	-4.18	1.26	-9.1	10.1	0.11	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

PX, PY, PZ, Energy of the final $\gamma\gamma\mu\mu$ are the same

Extended lhe file and Pythia6 output

<event>

```
6  1  0.11270692E-02  0.10000000E+01  0.72992998E-02  0.22516400E+00
  22 -1  0  0  0  0  0.46654747E+00  0.78703771E+00  0.27205073E+02  0.27205008E+02 -0.91492891E+00 0. 9.
  22 -1  0  0  0  0 -0.67513611E+00 -0.56015293E-01 -0.97674117E+01  0.97673764E+01 -0.67745589E+00 0. 9.
  13  1  1  2  0  0  0.39757913E+01 -0.52750434E+00  0.26557717E+02  0.26859052E+02  0.10566000E+00 0. 9.
 -13  1  1  2  0  0 -0.41843799E+01  0.12585268E+01 -0.91200557E+01  0.10113333E+02  0.10566000E+00 0. 9.
2212  1  0  0  0  0 -0.46654747E+00 -0.78703771E+00  0.64727949E+04  0.64727950E+04  0.93827000E+00 0. 9.
2212  1  0  0  0  0  0.67513611E+00  0.56015293E-01 -0.64902326E+04  0.64902326E+04  0.93827000E+00 0. 9.
```

</event>

[ParticleListDrawer] analysing particle collection genParticles

ID -	Name Stat	Mo1	Mo2	Da1	Da2	nMo nDa	px	py	pz	m	
22 -	gamma 3	2	2	6	7	1 2	-2.187	0.261	27.272	0.000	
22 -	gamma 3	3	3	6	7	1 2	-2.783	1.058	-9.619	-0.000	
-13 -	mu+ 1	7	7	-1	-1	1 0	-7.016	2.317	-8.484	0.106	
13 -	mu- 1	6	6	-1	-1	1 0	1.832	-0.267	26.194	0.106	
2212 -	p+ 1	0	0	-1	-1	1 0	2.187	-0.261	6472.458	0.938	
2212 -	p+ 1	1	1	-1	-1	1 0	2.783	-1.058	-6490.111	0.938	

PZ, Energy of the $\gamma\gamma\mu\mu p p$ are the same;
PX, PY are different, so Pythia changes the p_T