

Dark matter search in higgs portal scenario

10/7/16

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status

É Last meeting

- ó Positron beam polarization was available.

- ó B.G cross-sections were well suppressed with positron polarization.

É First problem

- ó When I checked the basic information, there was a strange $\cos\theta$ distribution of fermion type dark-matter.

- ó Its generator information was checked.

- ó The $\tilde{\text{olibö}}$ file of physsim was broken. So it had been corrected.

É Second one

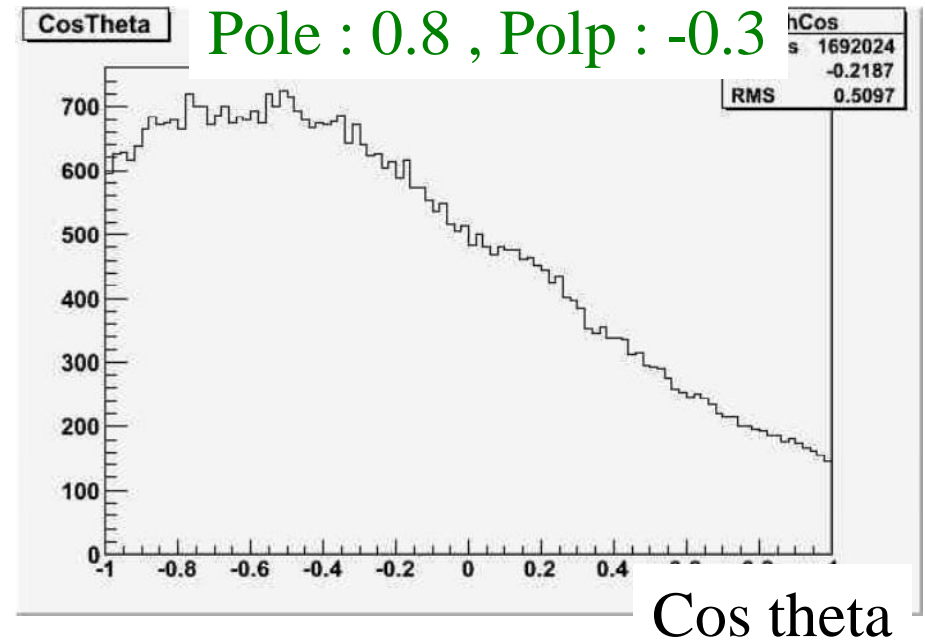
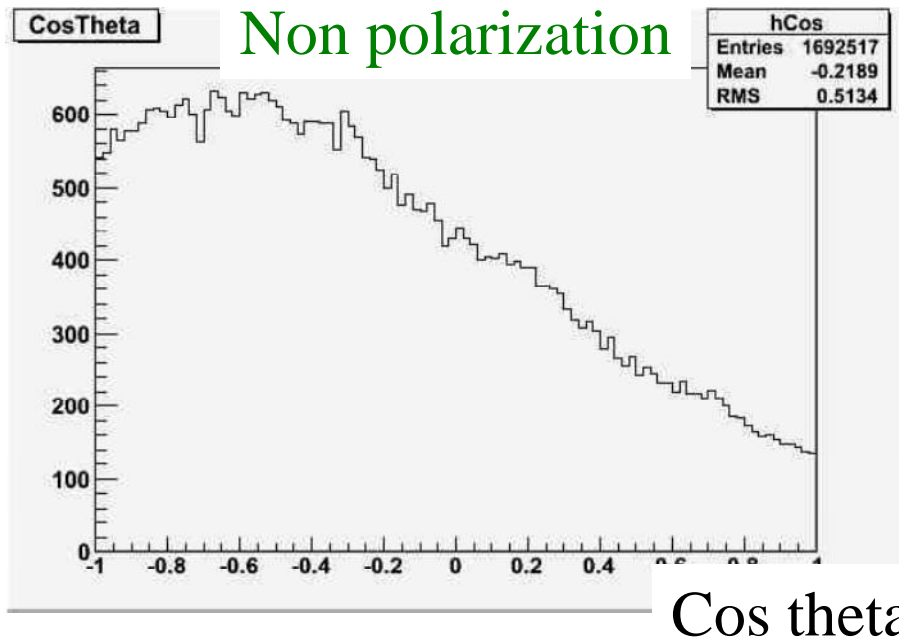
- ó Z decay rate is not correct. This problem have not been solved.

Z boson flying to bandcap

Cos theta of Z-boson was checked
in **fermion** type.

Ecm : 300 GeV

Dark-matter mass : 70GeV



With or without polarization, Z boson tend to fly to beam axis.

Correct the $\tilde{0}$ libö file

This problem was solved

Z boson decay rate

Ecm : 300 GeV

Dark-matter mass : 70GeV

cross-section : 10.27[fb] (Z to all)

Daughter of Z (the number is defined at "jsf.conf" file)	Cross section [fb]
1 electron neutrino	0.062
2 muon neutrino	0.031
3 tau neutrino	0.062
4 e	0.031
5 muon	0.062
6 tau	0.031
7 u	0.112
8 c	0.144
9 t	0.111
10 d	0.144
11 s	0.141
12 b	nan

x2 ?

Total 0.838 fb too small

4

Summary & plan

Summary

- É Only in Fermion dark-matter event, Z boson flew to beam axis.
 - É This reason was the $\tilde{\text{olibö}}$ file was broken. But I do not know why this file was broken.
- É All type dark-matter event, Z boson decay rate is not correct.
 - É This problem has not been solved yet. -> continue.

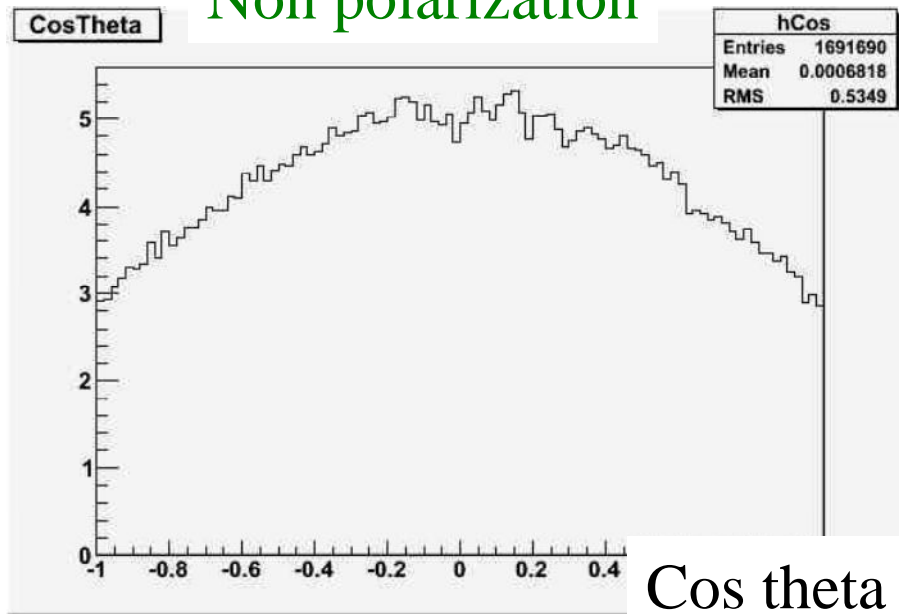
Cos theta of Z-boson was checked in **scalar** type.

Ecm : 300 GeV

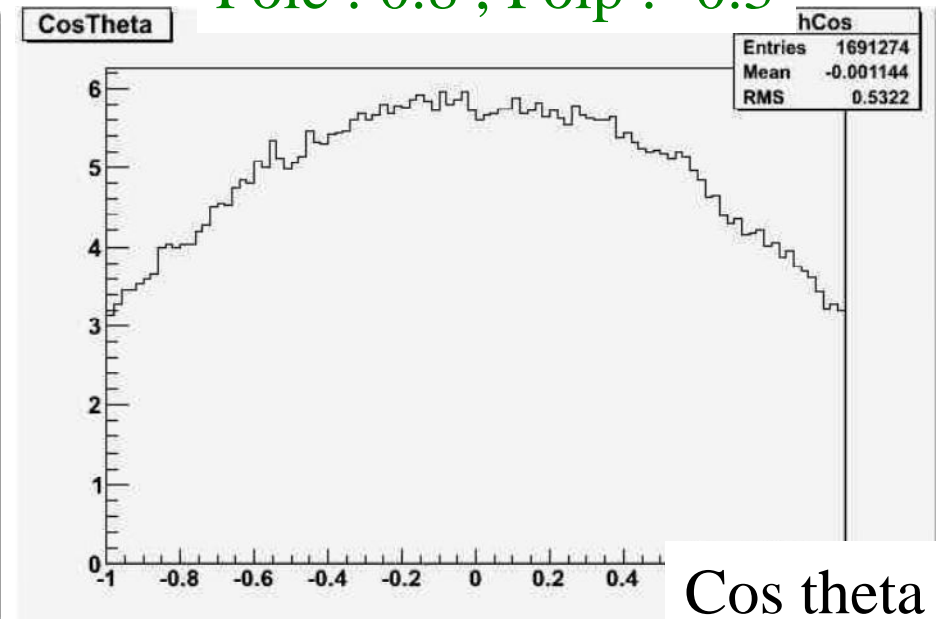
Dark-matter mass : 70GeV

beam information
 e^+ energy = e^- energy

Non polarization



Pole : 0.8 , Polp : -0.3

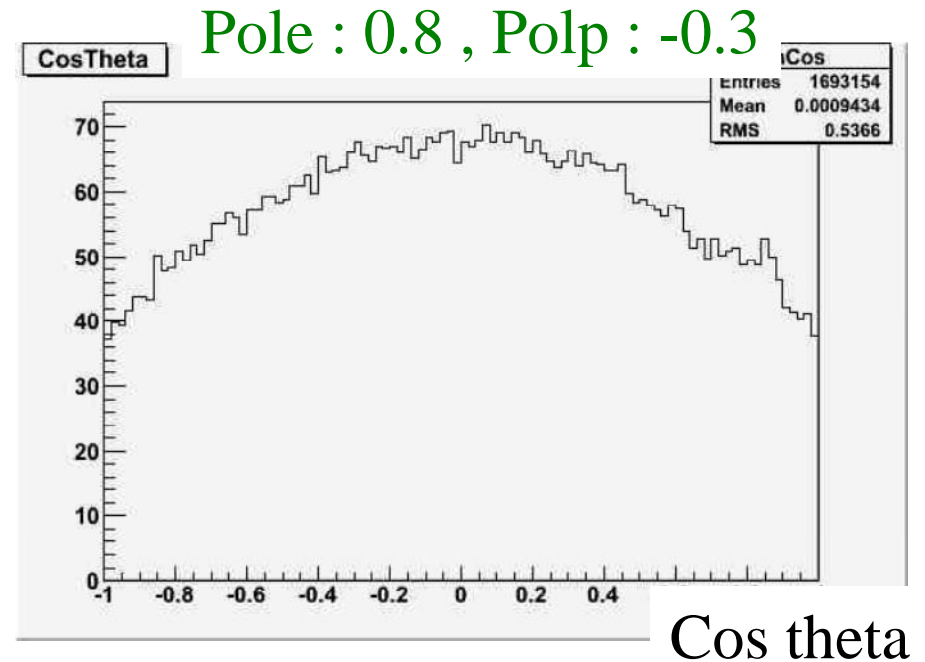
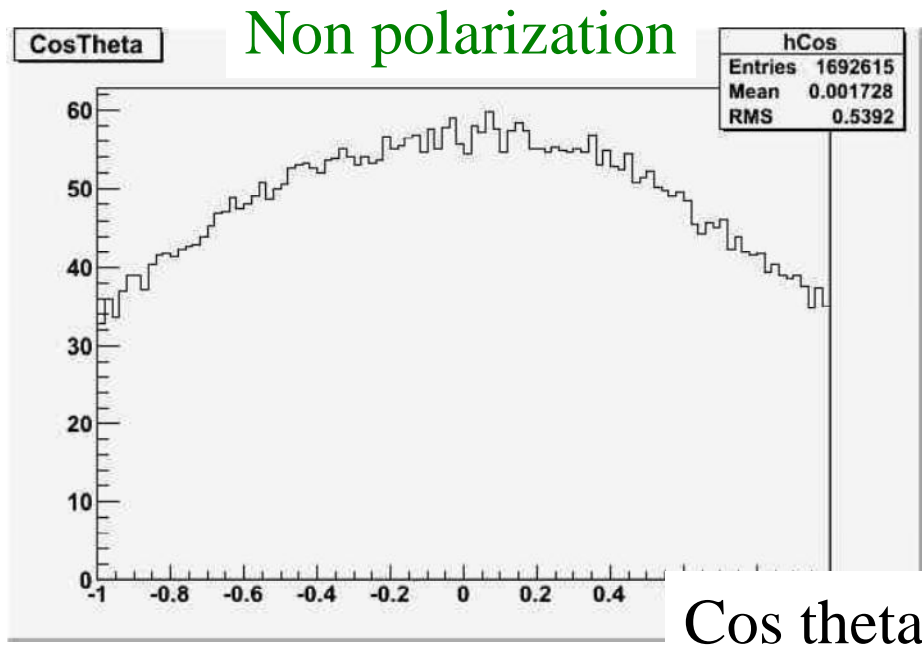


Cos theta of Z-boson was checked in **vector** type.

Ecm : 300 GeV

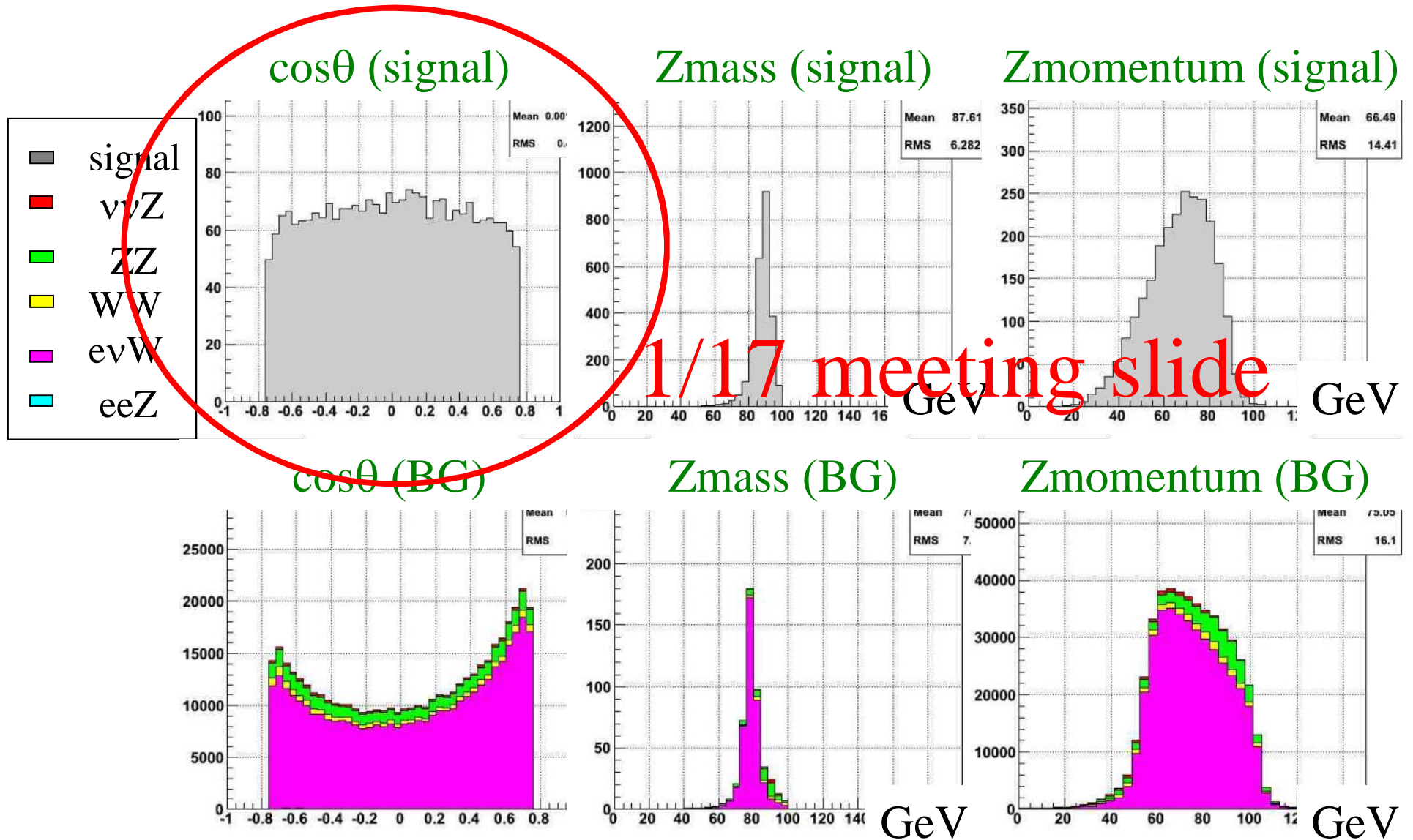
Dark-matter mass : 70GeV

beam information
 e^+ energy = e^- energy



Likelihood parameters

The parameters of likelihood was checked



Fixed version

Cos theta of Z-boson was checked in **fermion** type.

Ecm : 300 GeV

Dark-matter mass : 70GeV

