Dark matter search in higgs portal scenario

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status

- Check the cross-section limit with following setup.
- To reduce WW event, JetAnalysis code was improved.

Setup

- Checked dark-matter mass : 10 ~ 100 GeV
- Background
  - ZZ, WW, Zνν
- Luminosity : 2 ab^{-1}
- Ecm : 300 GeV
- Beam polarization : right handed electron 80%

Summary & plan

Summary

- The cross section limit is being checked now.
- Improved JetAnalysis code was prepared.

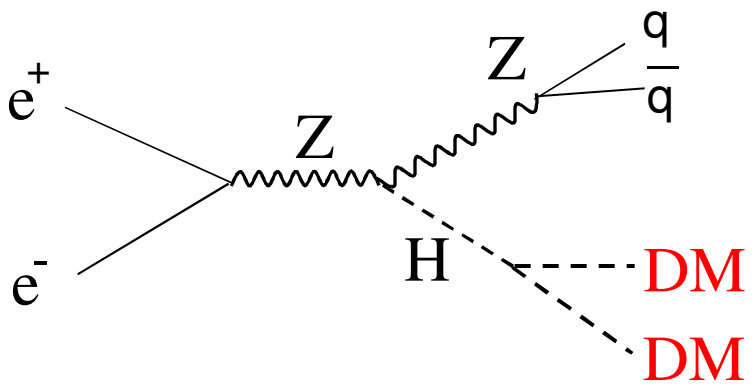
Plan

- Continue checking the cross-section limit.

Event under consideration

< signal (scalar) >

- ee → ZH*→qqDMDM



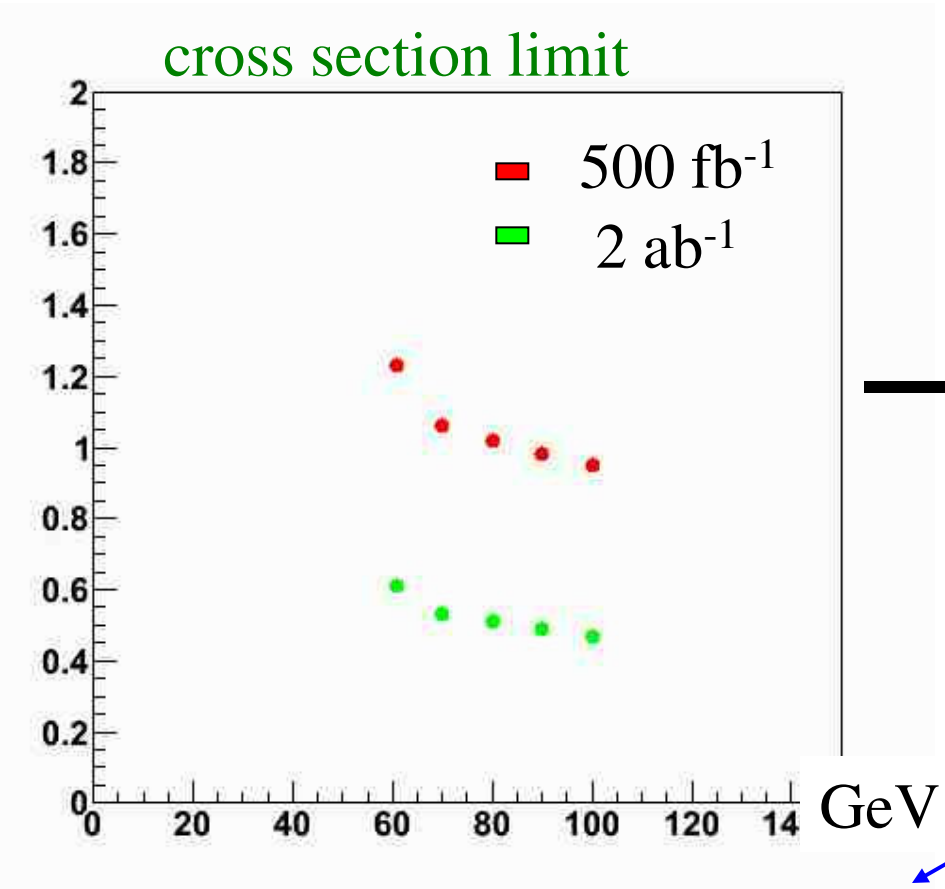
< background >

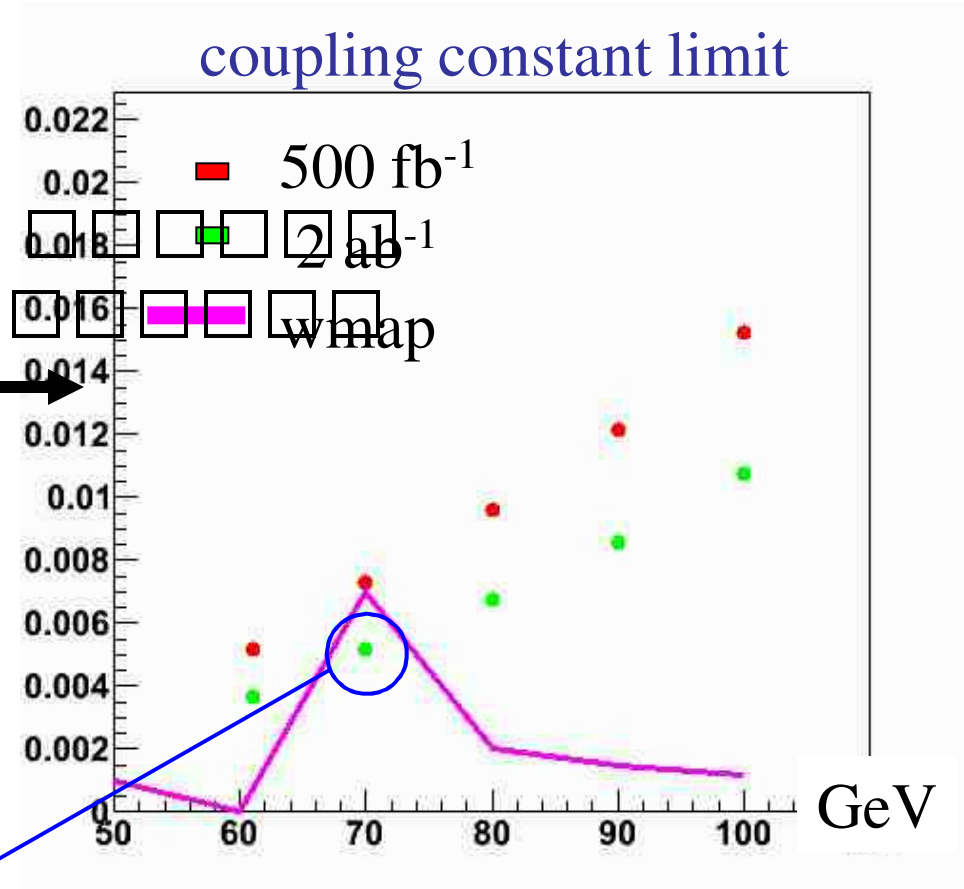
- ee→WW :9024fb
  - WW→qqln
- ee→ZZ : 515fb
  - ZZ→qqnn

ILC sensitivity : fermion

Ecm : 500 GeV

Beam polarization : non



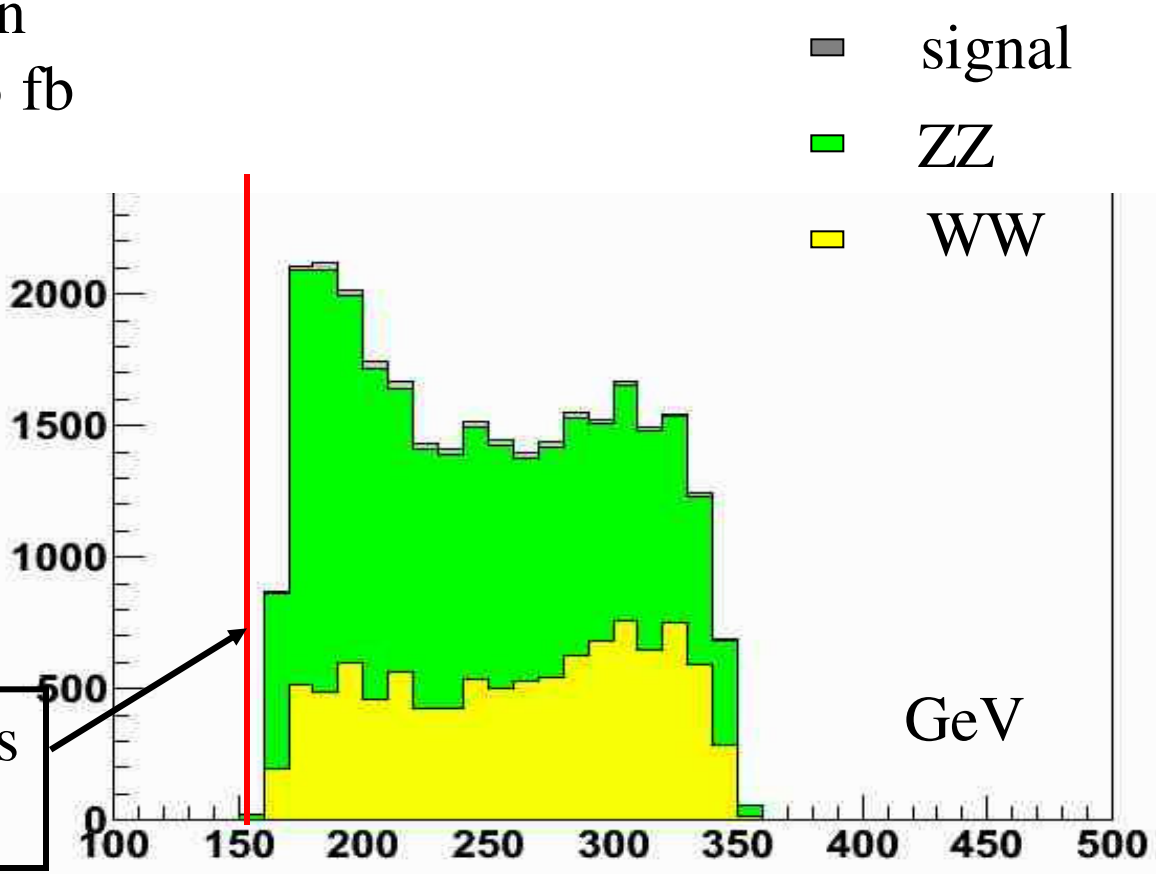


Check the missing mass distribution at this point

Missing mass

Missing mass distribution was checked at 70 GeV

Dark-matter mass : 70 GeV
Dark-matter type : fermion
Signal cross section : 0.53 fb
Luminosity : $2ab^{-1}$
Significance : 2σ



Z-energy cut makes this threshold.