Higgs self-coupling analysis with H→WW*

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05/29/2015

STATUS

- Vertex finding
  - Check using c jets
  - Compare Nominal & AVF+BNess algorithm
  - check BNess tagger fake track rejection bias

- Study for jet clustering
  - Study jet structure
  - Trying to distinguish quark & gluon jets
  - Trying to catch any hints
  - So far, no hint can be obtained…

VERTEX FINDING OF CJETS

- Common parameters are set at same values for comparison
- Same event sample(ccHH sample) 35763 events
- 6 jet clustering, jet matching with MCtruth is performed
- Num. of vertices

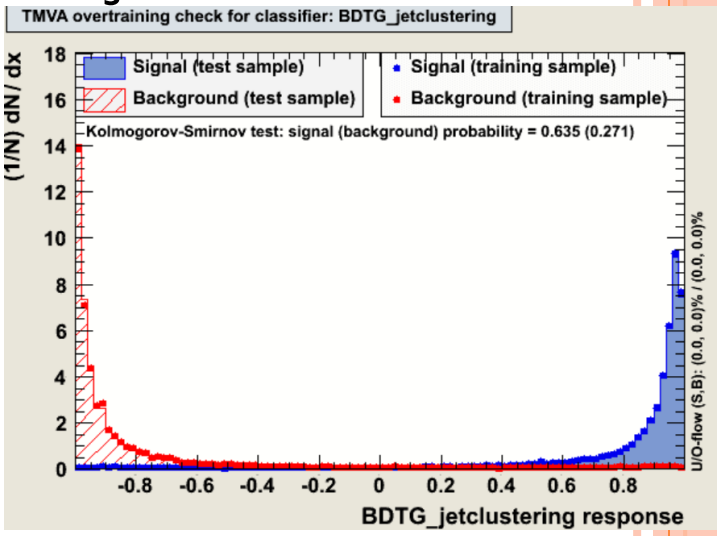
method	cjet with 2vtx	cjet with 1+1vtx	cjet with 1vtx	total
Nominal Algorithm	339	941	28327	29607
AVF&BNess	666	1062	30506	32233

  - Total: ～9% increased
- Vertex mis-ID eff. is increased
  - Though num. of vertices is small
  - →need additional selection? (e.g.)vertex mass?)
- Fake rate per vtx: so far under investigation

method	cjet with 2vtx	cjet with 1+1vtx	cjet with 1vtx
Nominal Algorithm	0.00±0.00	0.08±0.01	0.04±0.001
AVF&BNess	0.00±0.00	0.09±0.01	0.04±0.001

For jet clustering

- Try to separate quark and gluon jets
  - Start from 20 jet clustering using Durham(qqHH→qqbbbb sample)
  - Separate candidates of quark core jets and gluon jets
  - Construct the separator(first trial…)
  - Can separate well



But, this classifier can't be identified core jets Perfectly…

- Especially, low energy quark jet fragment into small energy partons & flying in different direction
- When some quarks are going in same direction
- So, jet clustering can't catch the correct direction of all quark jets
  - e.g.) durham 6 jet clustering for qqHH→qqbbbb events

	Good events	Bad events
Durham	0.686±0.01	0.314±0.007

  - Can we improve this??