

VBF Higgs to Invisible - Update
AN-14-243
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Introduction

- ▶ Light trees have been made using prompt data ntuples and trigger weights
- ▶ Data cards have been made using the prompt light trees for both the prompt and parked cuts
 - I don't have the ggH samples or UES information in the prompt data ntuples,
 - ggH and UES are therefore neglected in all limits on next slide
- ▶ Results on next slide
- ▶ nb As we now drop $W\gamma$ the limits on the next slide should be compared to 46.29% not the 49% in the paper

Limits

- ▶ 14 ± 10 used for parked cuts QCD estimate
- ▶ 31 ± 23 from paper used for prompt cuts QCD estimate
- ▶ Data driven top control region used for both prompt and parked cuts
- ▶ Prompt trigger weights ignore correlations in turn on part of parked cut region

	Prompt trigger	parked trigger
Prompt cuts	45.12%	45.51%
Parked cuts	47.07%	39.65%

Interpretation

- ▶ Prompt cuts limits \sim same as old card with both prompt and parked trigger
- ▶ The parked cuts give a worse limit with prompt trigger than with parked trigger
 - i.e. We can only use the parked cuts because of the parked trigger
- ▶ Also seen in parked cuts control region data yields, most higher with parked trigger
 - Where prompt trigger yield is larger prompt and parked yields are within stat. unc. of each other

Summary

- ▶ Prompt cuts numbers from light tree framework compatible with old cards for prompt and parked triggers
- ▶ Improvement to limit seen from using parked analysis cuts is only possible because of parked trigger
- ▶ Adding ggH and UES contribution back into parked trigger with parked cuts card gives limit of 37% as shown on Monday

Backup