

# **Future of VBF measurements**

**Wednesday, September 21, 2016 - Friday, September 23, 2016**

**Durham**

## **Scientific Program**

The workshop will concentrate on four different topics:

Extraction of the VBF signal

Precision VBF measurements

Higgs VBF measurement

Novel VBF searches

**Session 1: VBF signal extraction and associated data-driven background constraints**

Experimental input:

Lessons from ATLAS for VBF W/Z

Multivariate techniques in Higgs boson studies

Theory input:

Modelling of non-VBF processes

Signal/background interference

EW corrections to signal/background processes

**Session 2: Precision measurements of VBF Standard Candle Processes**

Experimental input:

experimental VBF W/Z results

Theory input:

can we extract VBF processes cleanly (EWK vs EWK+QCD measurements)

<span style="background-color:transparent; color:#000000; font-family:arial; font-size:14.66666666666666px;">observables of interest</span>

**Session 3: Higgs properties in VBF**

Experimental input:

ATLAS measurement of CP-invariance in H->tautau

ATLAS measurement of CP-properties in H->yy

<span style="background-color:transparent; color:#000000; font-family:arial; font-size:14.666666666666666px">General discussion: pros and cons of previous approaches</span>

<span style="background-color:transparent; color:#434343; font-family:arial; font-size:18.66666666666664px">Theory input:</span>

<span style="background-color:transparent; color:#000000; font-family:arial; font-size:14.666666666666666px">What can VBF do for Higgs measurements?</span>

**Session 4: Novel searches for new physics via VBF:**

<span style="background-color:transparent; color:#434343; font-family:arial; font-size:18.66666666666664px">Theory input</span>

<span style="background-color:transparent; color:#000000; font-family:arial; font-size:14.666666666666666px">the dark sector [input on DM, dark energy?, simplified model vs EFT in VBF, etc] </span>

<span style="background-color:transparent; color:#000000; font-family:arial; font-size:14.666666666666666px">lepton flavour/number violation in VBF processes?</span>

<span style="background-color:transparent; color:#000000; font-family:arial; font-size:14.666666666666666px">the CONTUR method </span>

<span style="background-color:transparent; color:#000000; font-family:arial; font-size:14.666666666666666px">From FeynRules -> MC: what is possible and what is not.</span>