

Weekly Report

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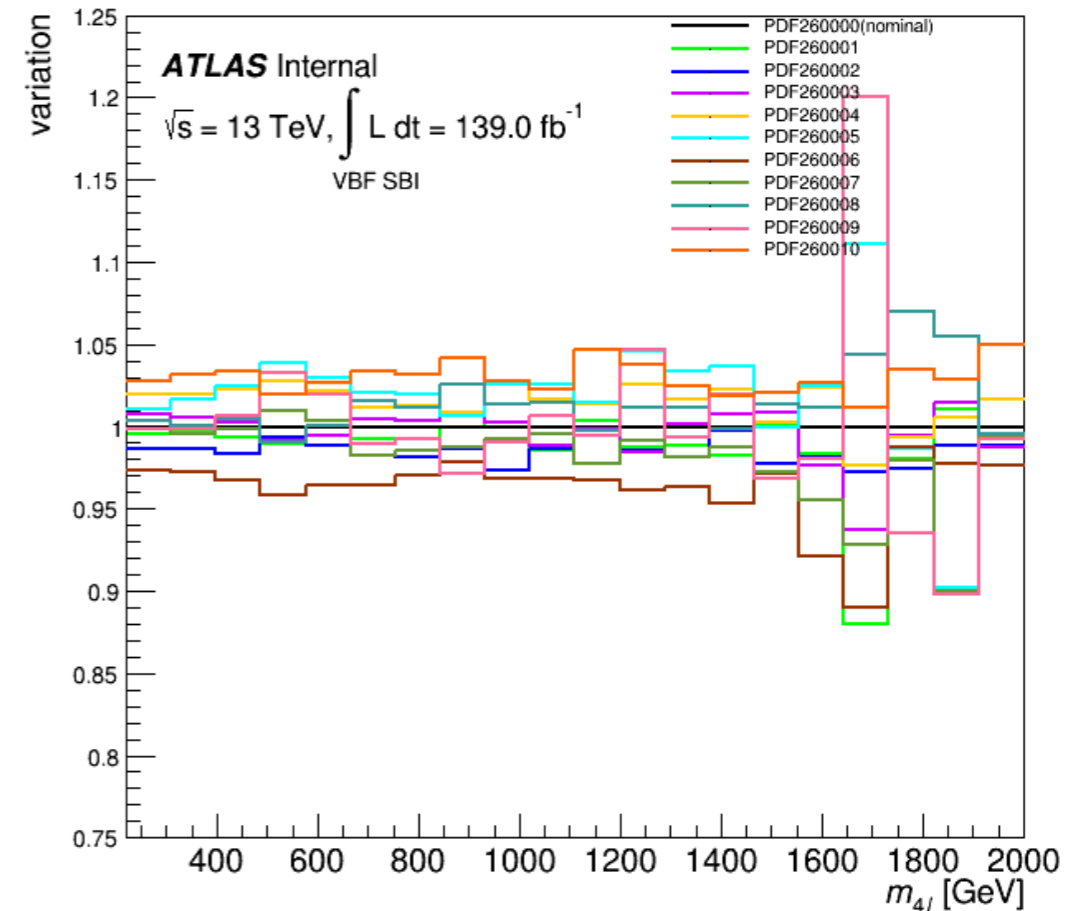
Internal PDF systematic uncertainty on VBF signal region

- ▶ internal PDF sets: MUR1.0_MUF1.0_PDF260000,, MUR1.0_MUF1.0_PDF260100
- ▶ Taken as the standard deviation of all variations as a function of m_{4l} and MELA
- ▶ 10 groups: 1-10, 11-20,, 91-100
- ▶ Compare for SIG, SBI, SBI5, SBI10, BKG

Internal PDF systematic uncertainty on VBF signal region

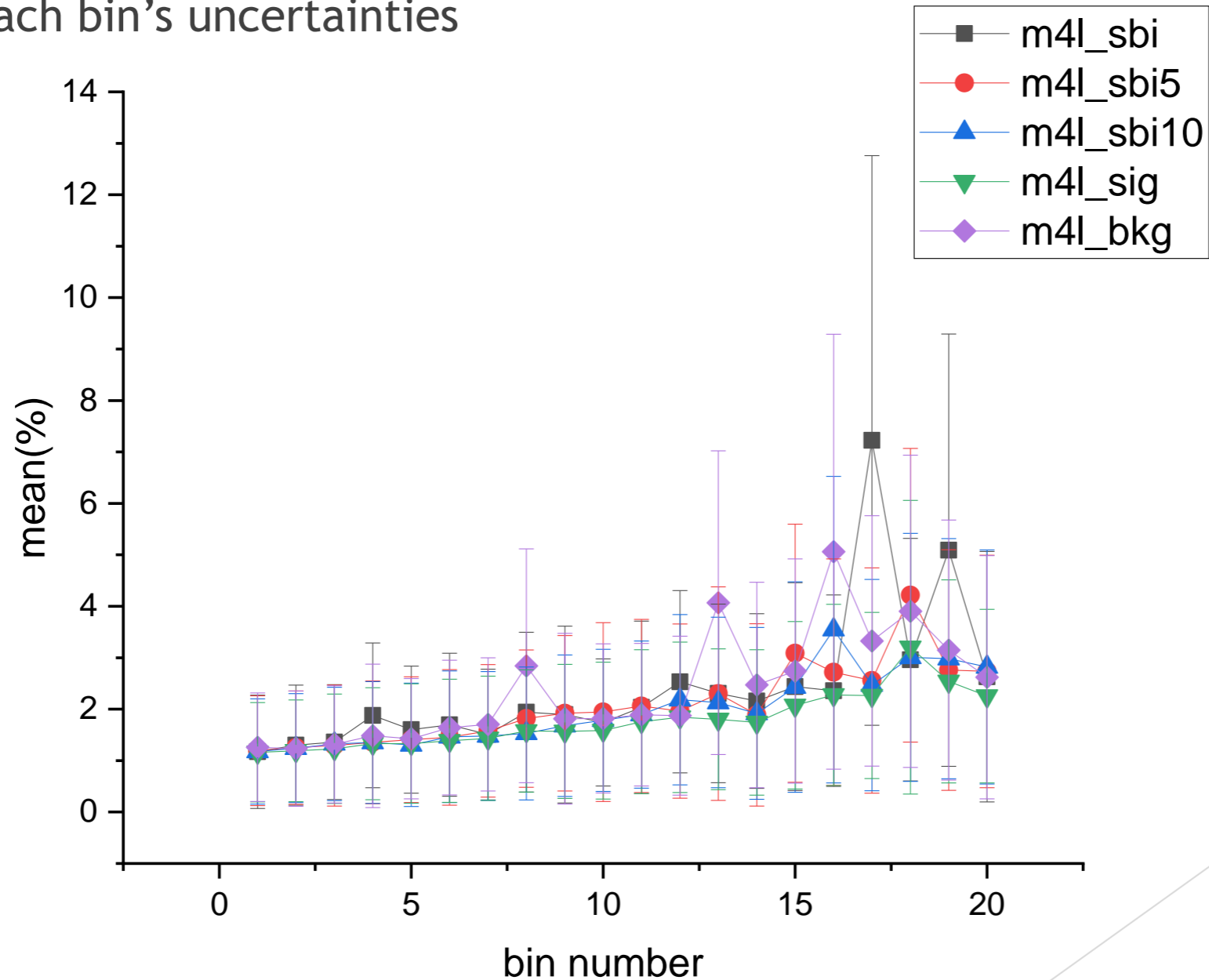
- ▶ As a function of m_{4l}
- ▶ **Method 1:** For each category, calculate the mean value of every PDF(20 bins); then take the 100 PDF mean values together as a group, calculate its mean and s.d.

category	Standard deviation	Mean value	uncertainty
SBI	1.2214%	2.3912%	$2.3912 \pm 1.2214\%$
SBI5	1.2077%	2.0749%	$2.0749 \pm 1.2077\%$
SBI10	1.2368%	1.9856%	$1.9856 \pm 1.2368\%$
SIG	1.2109%	1.7772%	$1.7772 \pm 1.2109\%$
BKG	1.1286%	2.3824%	$2.3824 \pm 1.1286\%$



Internal PDF systematic uncertainty on VBF signal region

- ▶ As a function of m_{4l} (20 bins, [220GeV, 2000GeV])
- ▶ **Method 2:** For each category, calculate the mean value and s.d. of every bin(100 PDFs)
- ▶ To see each bin's uncertainties

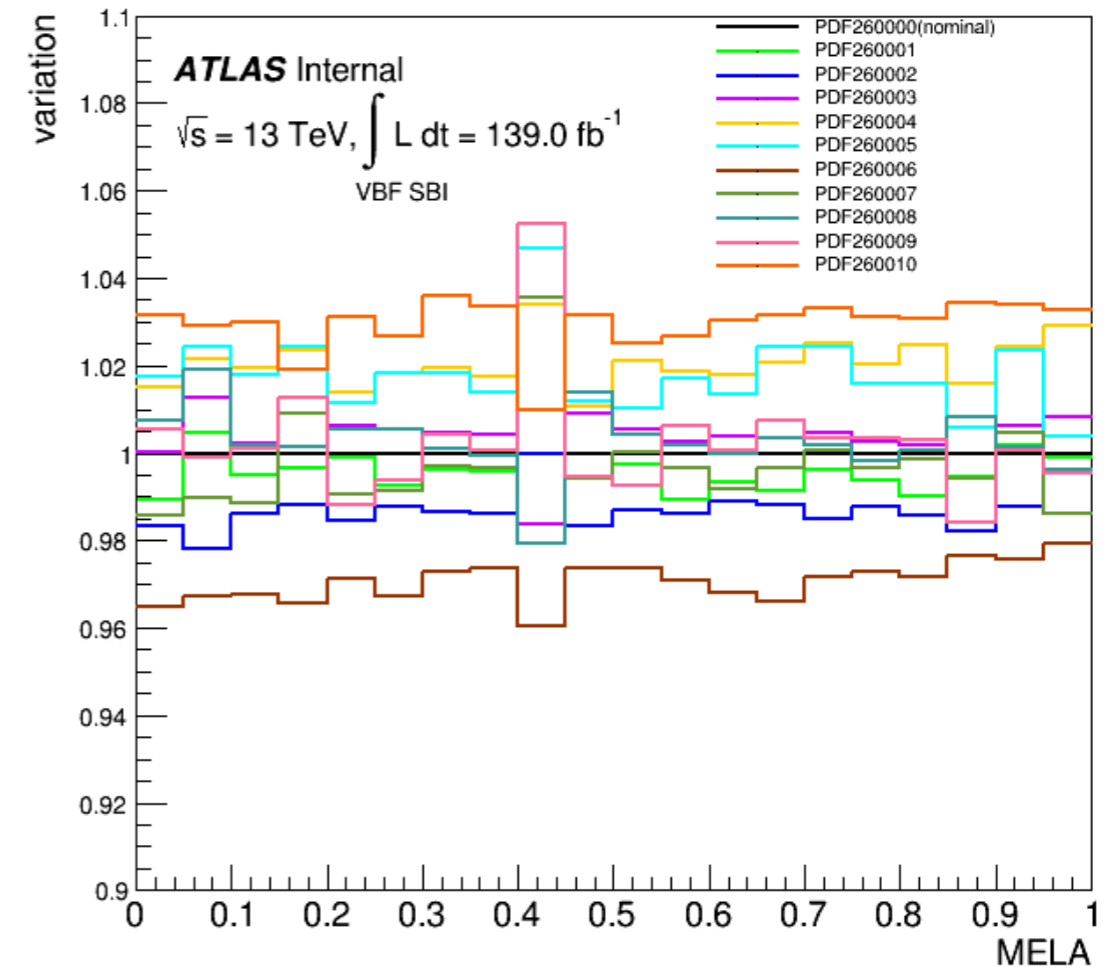


Internal PDF systematic uncertainty on VBF signal region

▶ As a function of MELA

▶ **Method 1**

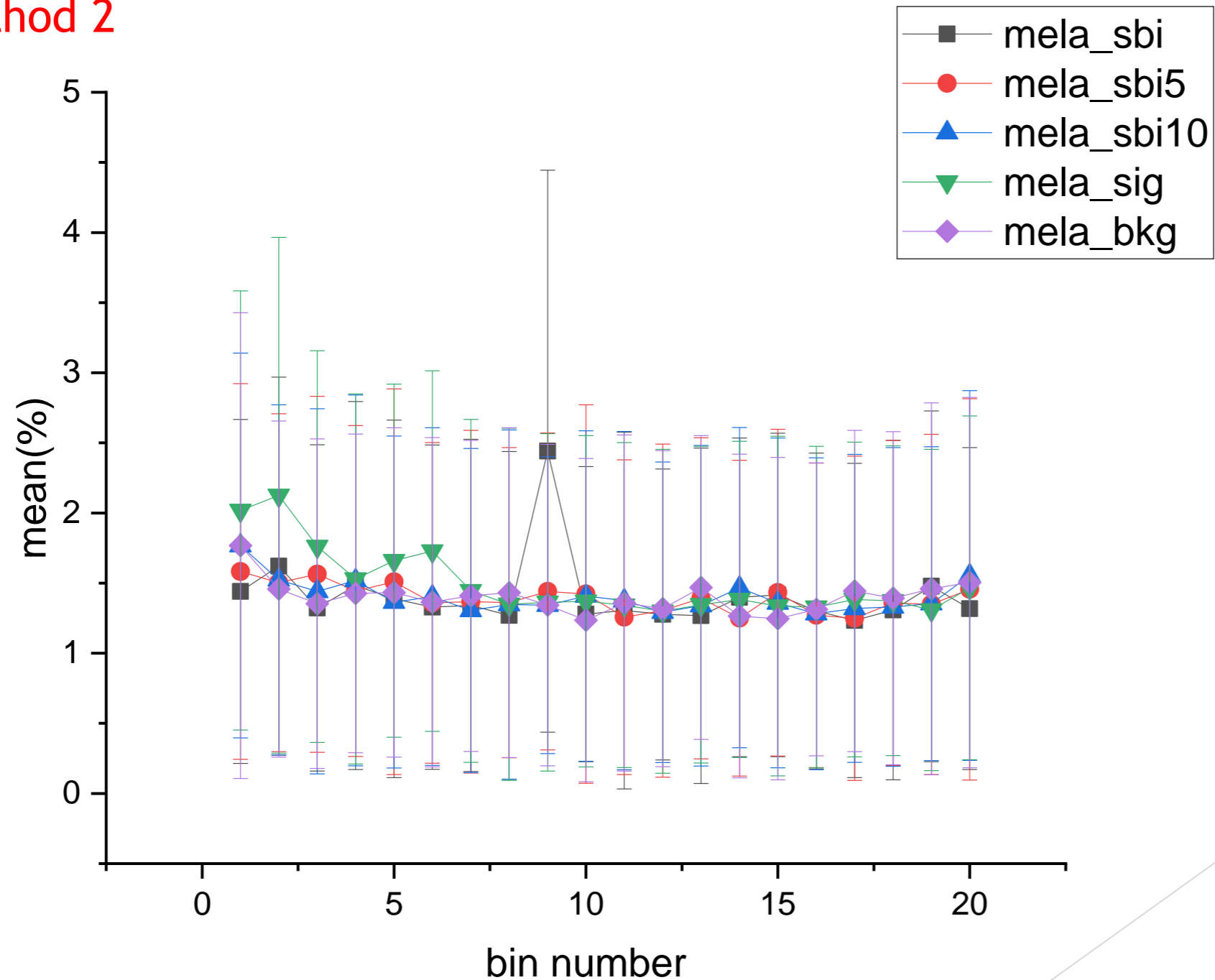
category	Standard deviation	Mean value	uncertainty
SBI	1.0641%	1.4108%	$1.4108 \pm 1.0641\%$
SBI5	1.1245%	1.3935%	$1.3935 \pm 1.1245\%$
SBI10	1.1225%	1.4048%	$1.4048 \pm 1.1225\%$
SIG	1.1432%	1.4960%	$1.4960 \pm 1.1432\%$
BKG	1.0743%	1.3996%	$1.3996 \pm 1.0743\%$



Internal PDF systematic uncertainty on VBF signal region

▶ As a function of MELA (20 bins, [0,1])

▶ **Method 2**



Next steps

- ▶ Present/discuss (if possible) this week the results at the H4l meeting
- ▶ Join the statistical fits efforts that Abdualazem and Zhan have already started

Thank you!