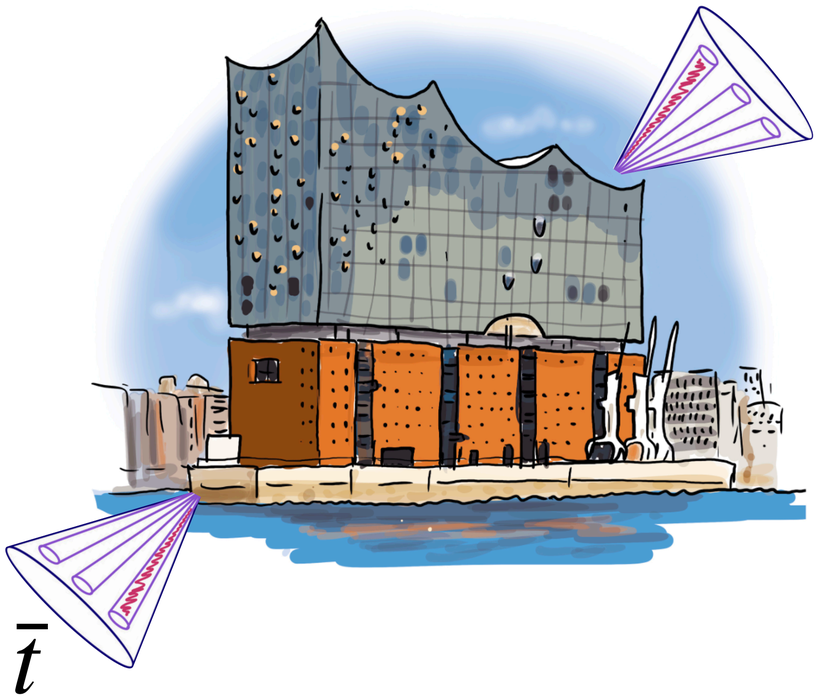
Top-quark charge asymmetry in $t\bar{t} + jets$ events

Hugo A. Becerril Gonzalez[1], An Ying[1], Maria Aldaya[1], Andreas Meyer[1], Abdieh Jafari[2]

1 Deutsches Elektronen Synchrotron DESY
2 Isfahan university of technology



From last presentation in TMP meeting

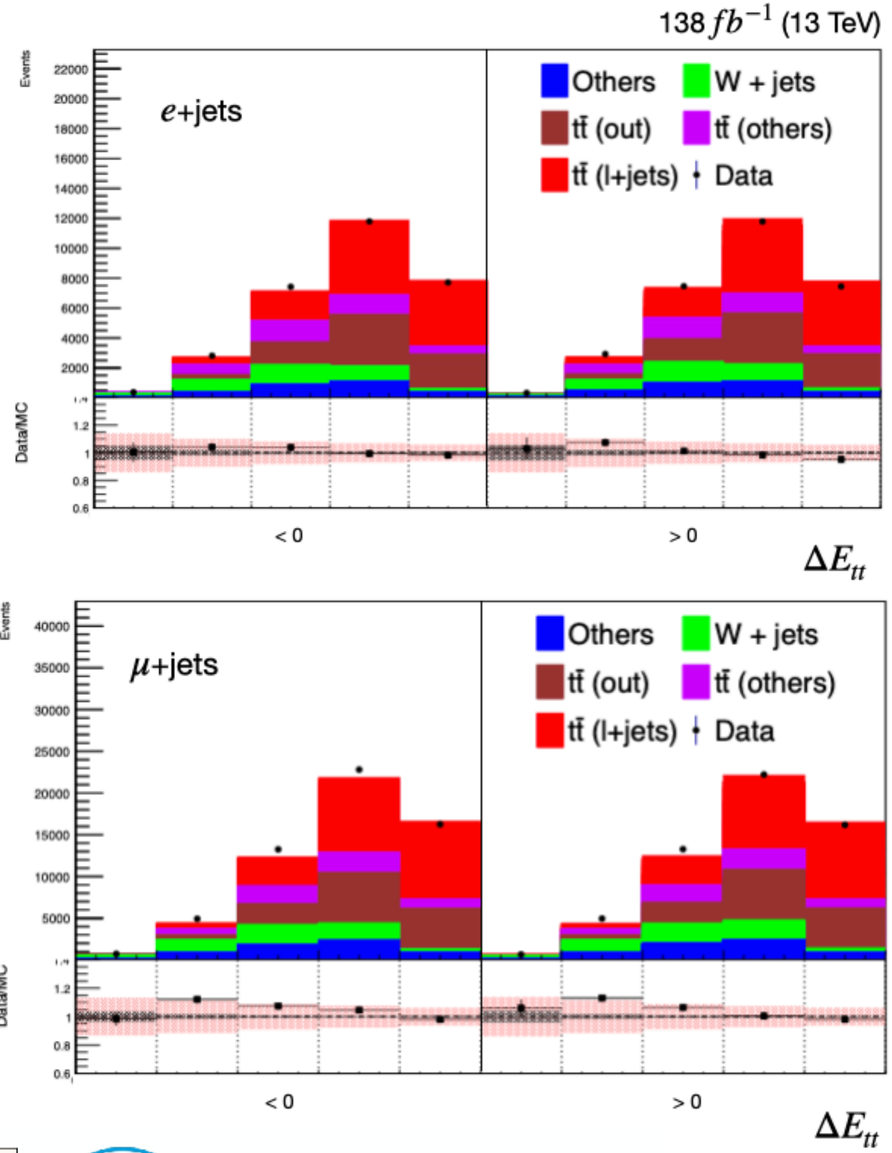
No major comments on new BDT strategy but needs to be documented in the AN

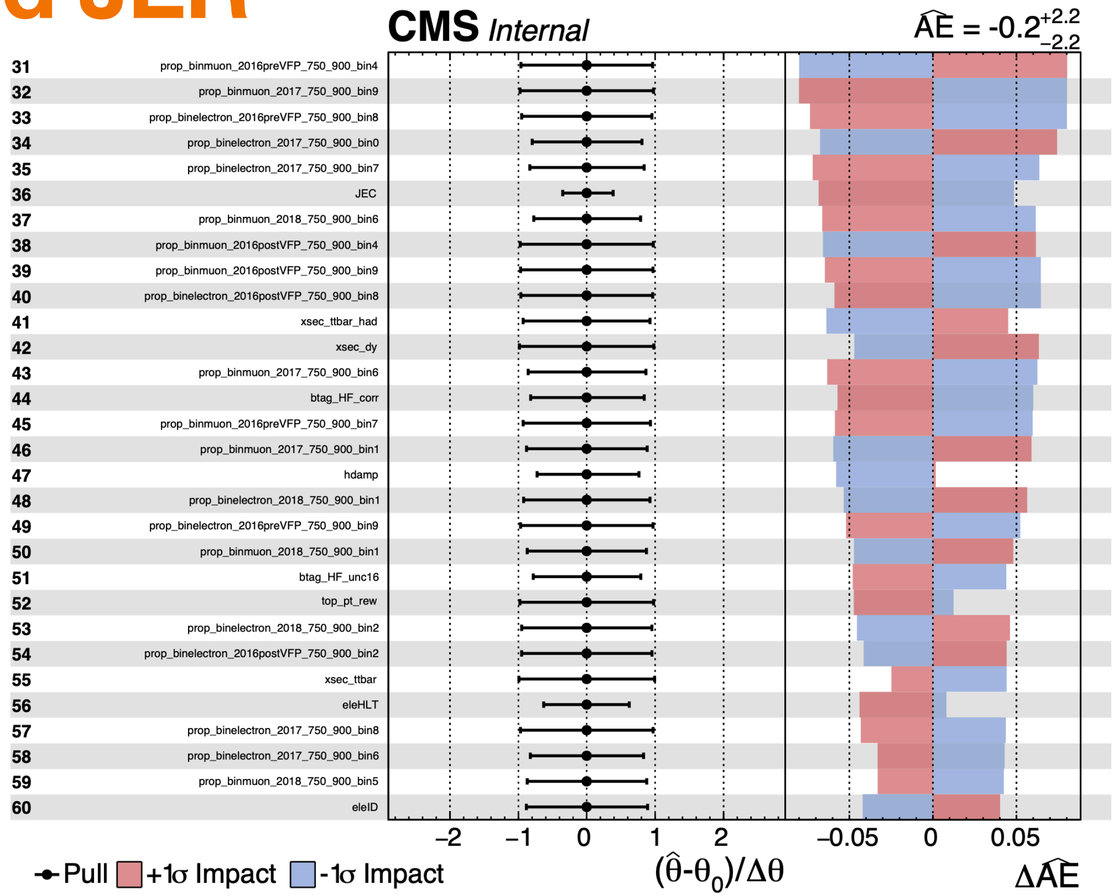
I suggested not to split JEC to save time and because syst. unc. Don’t play a major role in the final uncertainty.

> Comments from Niels was to send a version using the total JEC and we can decided based on that.

Not so many updates since I was on holidays but JEC and JER has been included

New results including JEC and JER





JEC is quite constrain but ranks 36th on the impact plots

Also, stat.uncertainty is the dominant uncertainty in the measurement

A_E = -0.2 +/- 2.243 (total)

A_E = -0.2+/- 2.170 (stat) +/- 0.84 (syst) [+/- 0.052 (JEC)]

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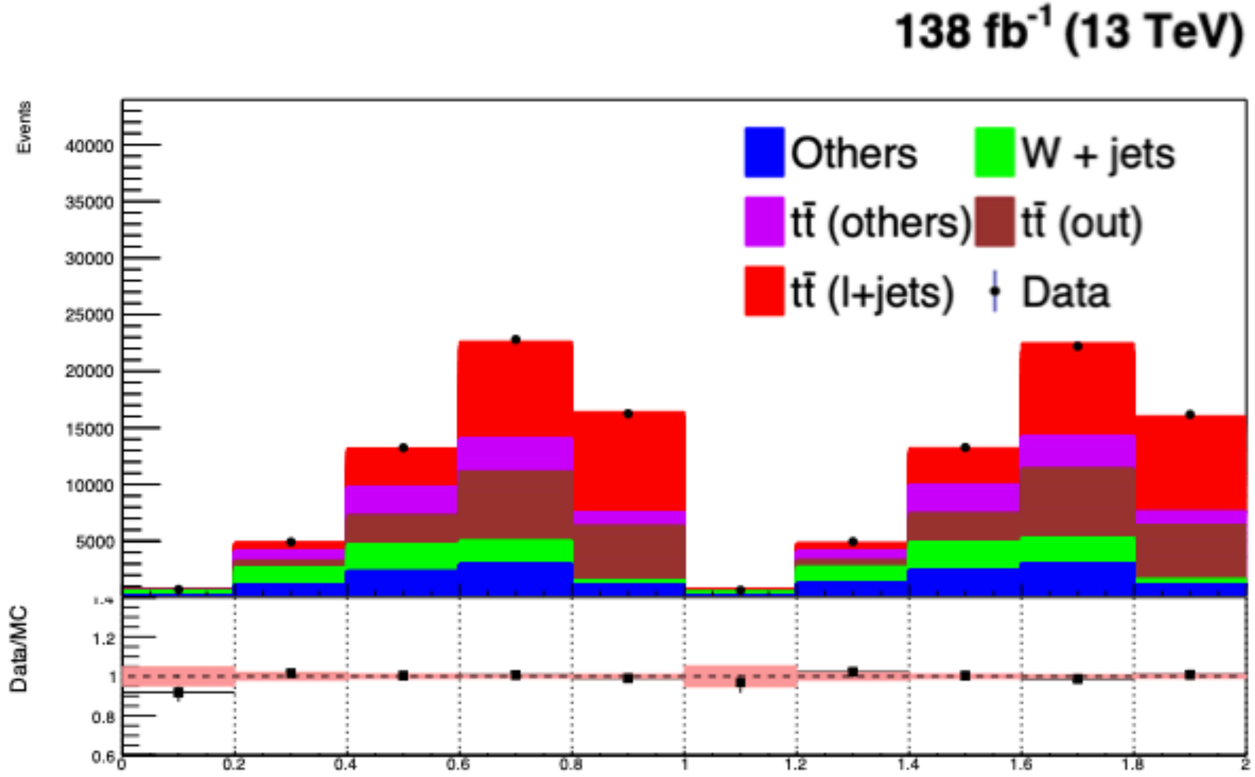
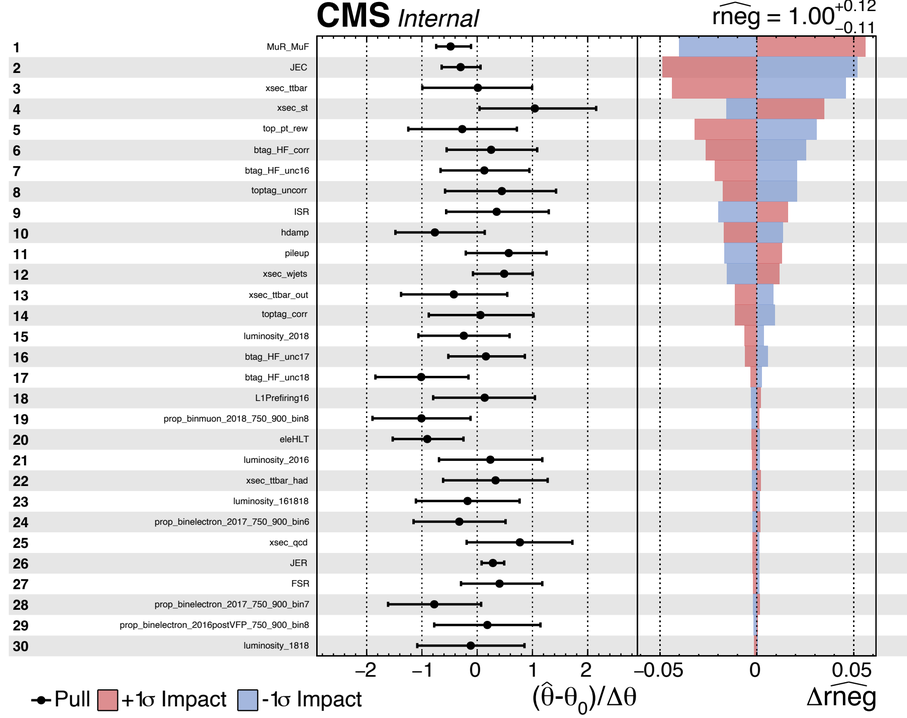
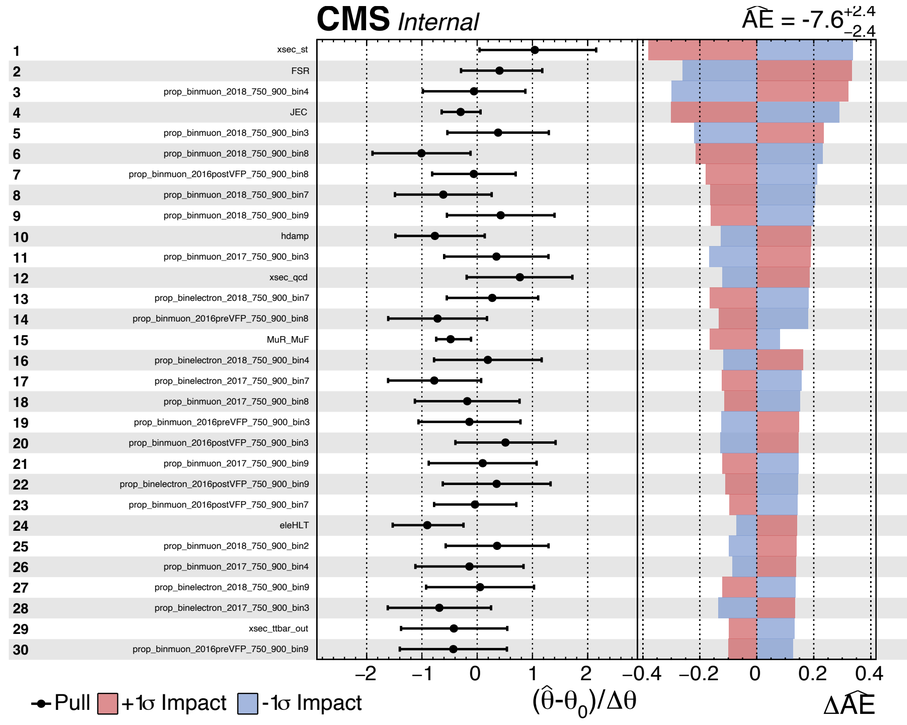
New results including JEC and JER







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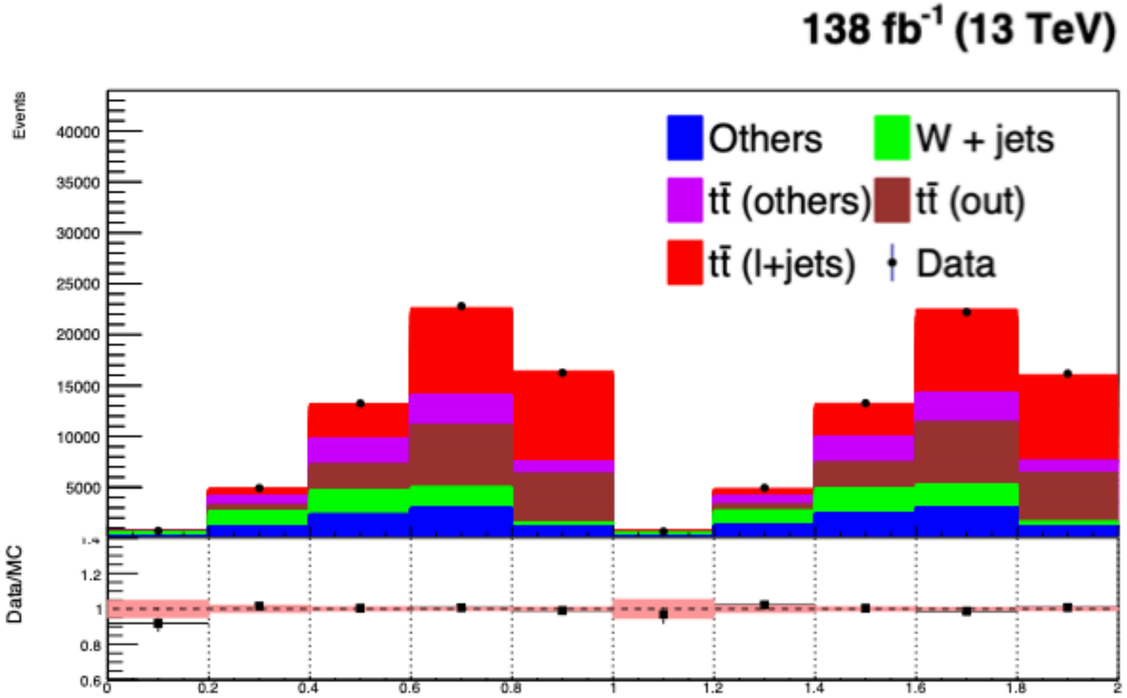
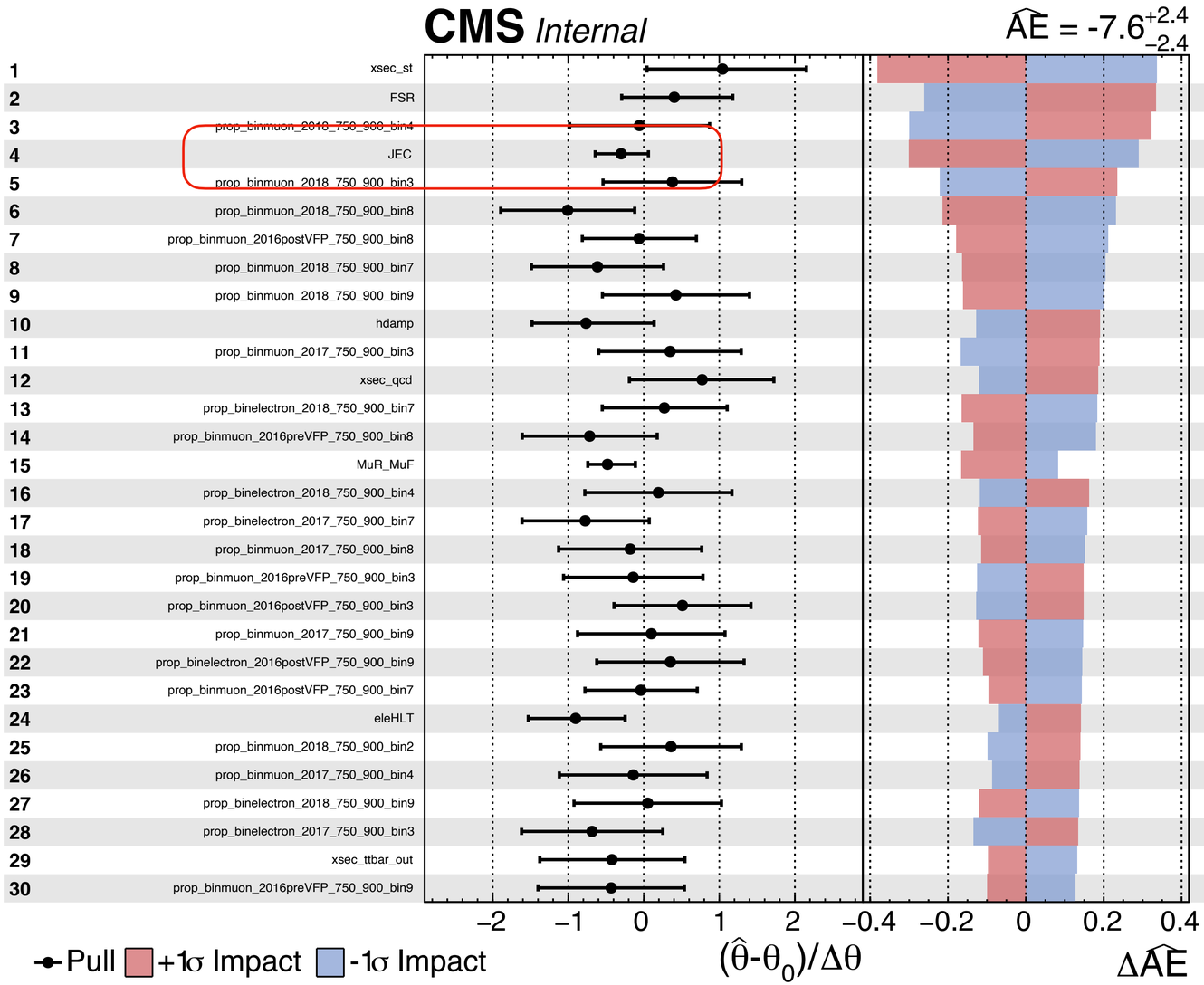
New results including JEC and JER





Here, JEC ranks 4th, which may raise questions about splitting JEC, but I will address this in the future.

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How this compares to ATLAS?

Scenario	$A_E \pm \Delta A_E\ [10^{-2}]$		
	$0 \le \theta_j \le \frac{\pi}{4}$	$\frac{\pi}{4} \le \theta_j \le \frac{3\pi}{5}$	$\frac{3\pi}{5} \le \theta_j \le \pi$
Data	-3.2 ± 2.1	-4.3 ± 2.0	-1.3 ± 1.8
SM prediction (MadGraph5_aMC@NLO)	-1.3 ± 0.3	-3.7 ± 0.3	-0.6 ± 1.3
SM expectation	-1.3 ± 2.1	-3.7 ± 2.0	-0.6 ± 1.6

No evidence of charge asymmetry

Significance iof ~ 2.1 SD

I am measuring AE only in ~ this bin

My goal, observation of charge asymmetry in ttj for the first time.

Our result?

A_E = -7.605 +/- 2.338 (total) ⟶ Significance iof ~ 3.25 SD

First evidence of charge asymmetry in $t\bar{t} + j$ events

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