

OO Event Selection Update

Jul 18 2025

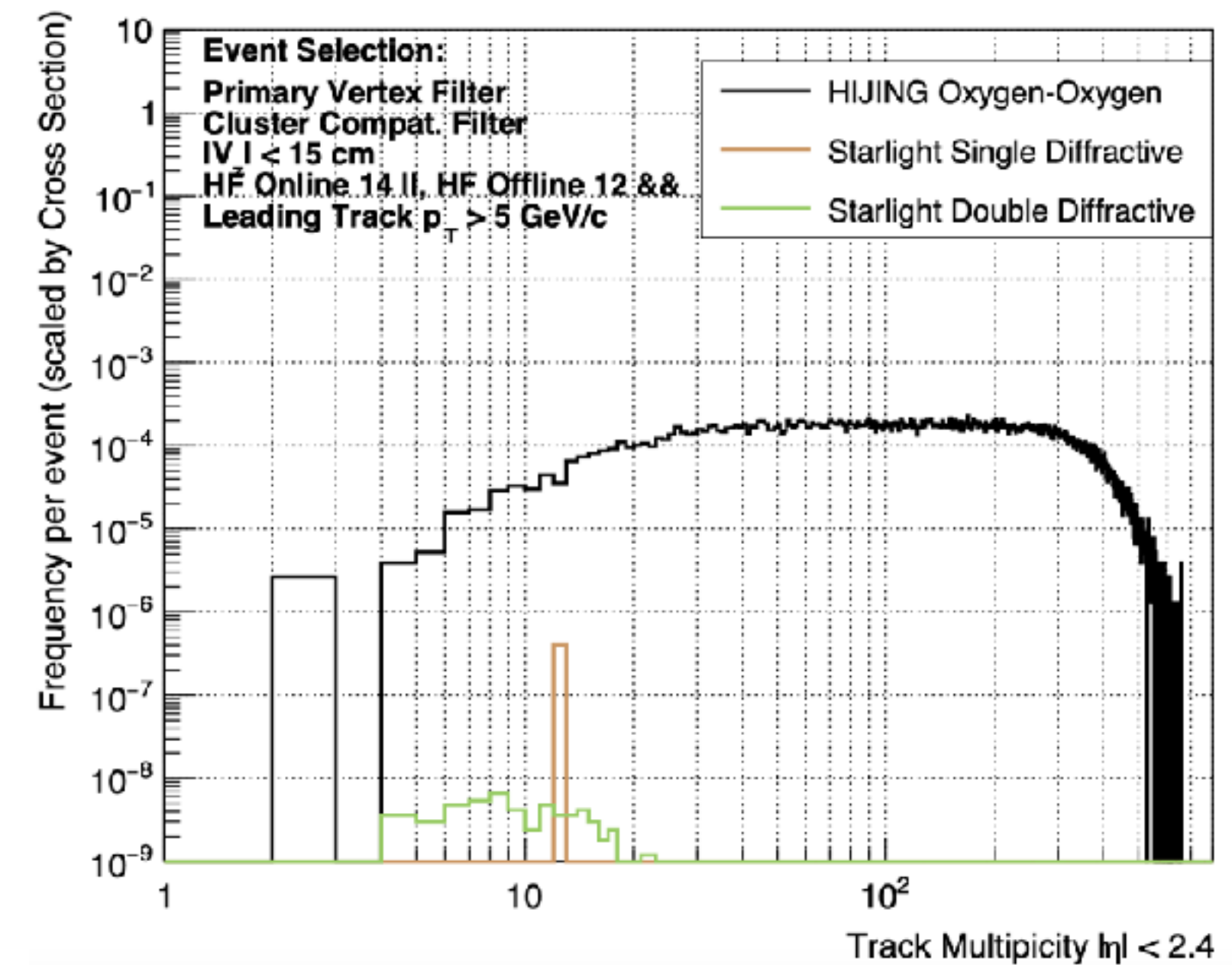
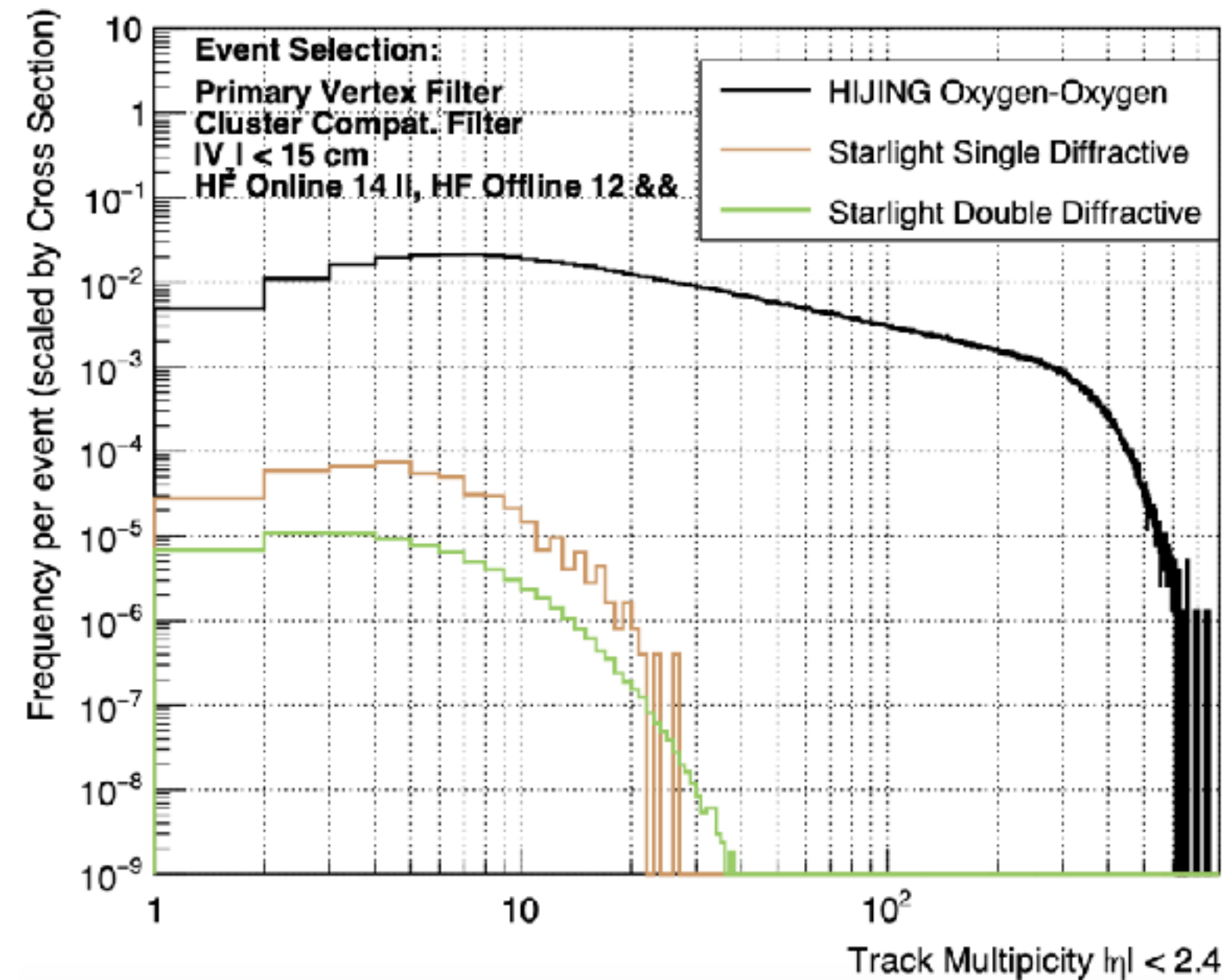
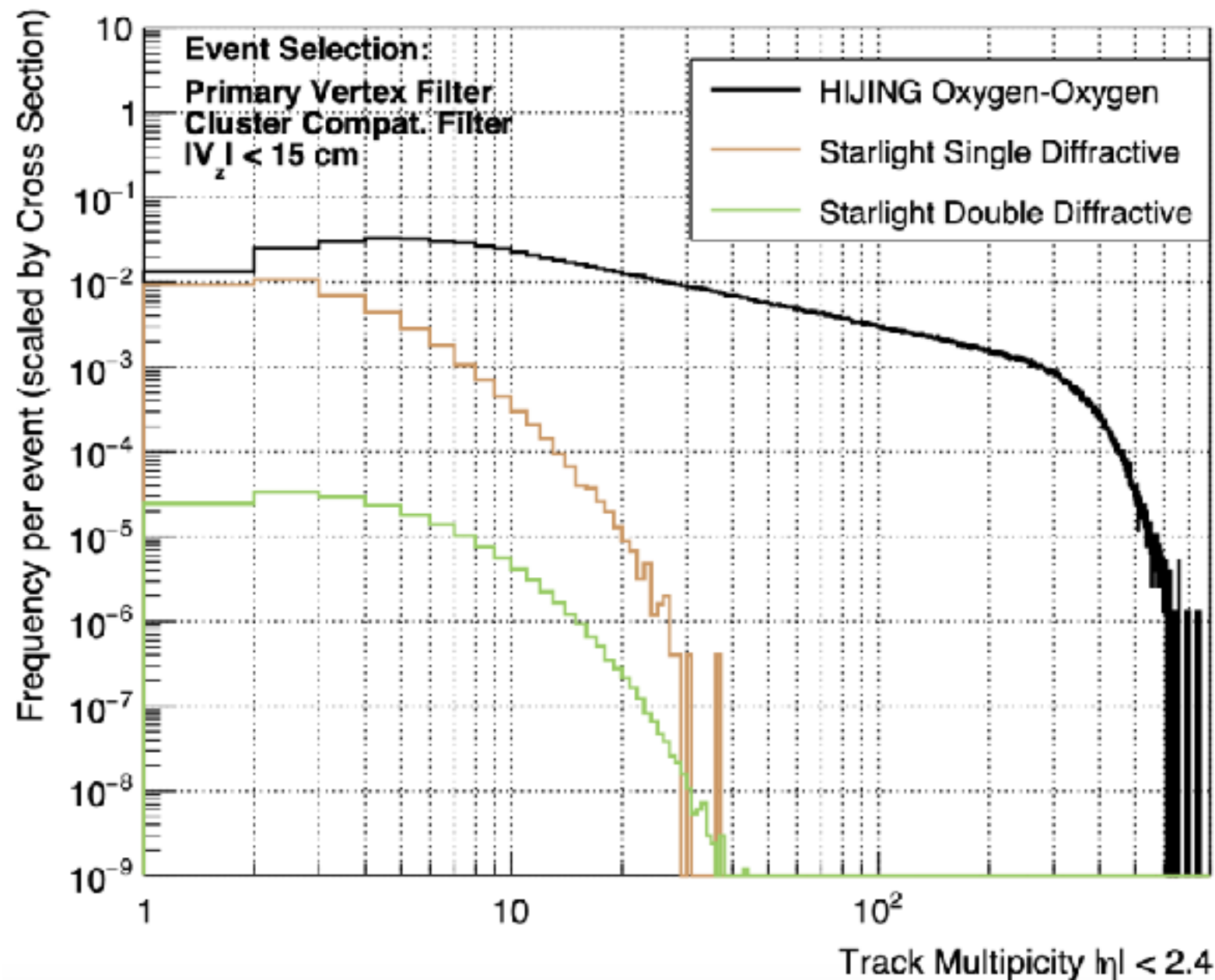
Abraham Lynn Kyle Balazs Dorka Tal Thomas

Strategy

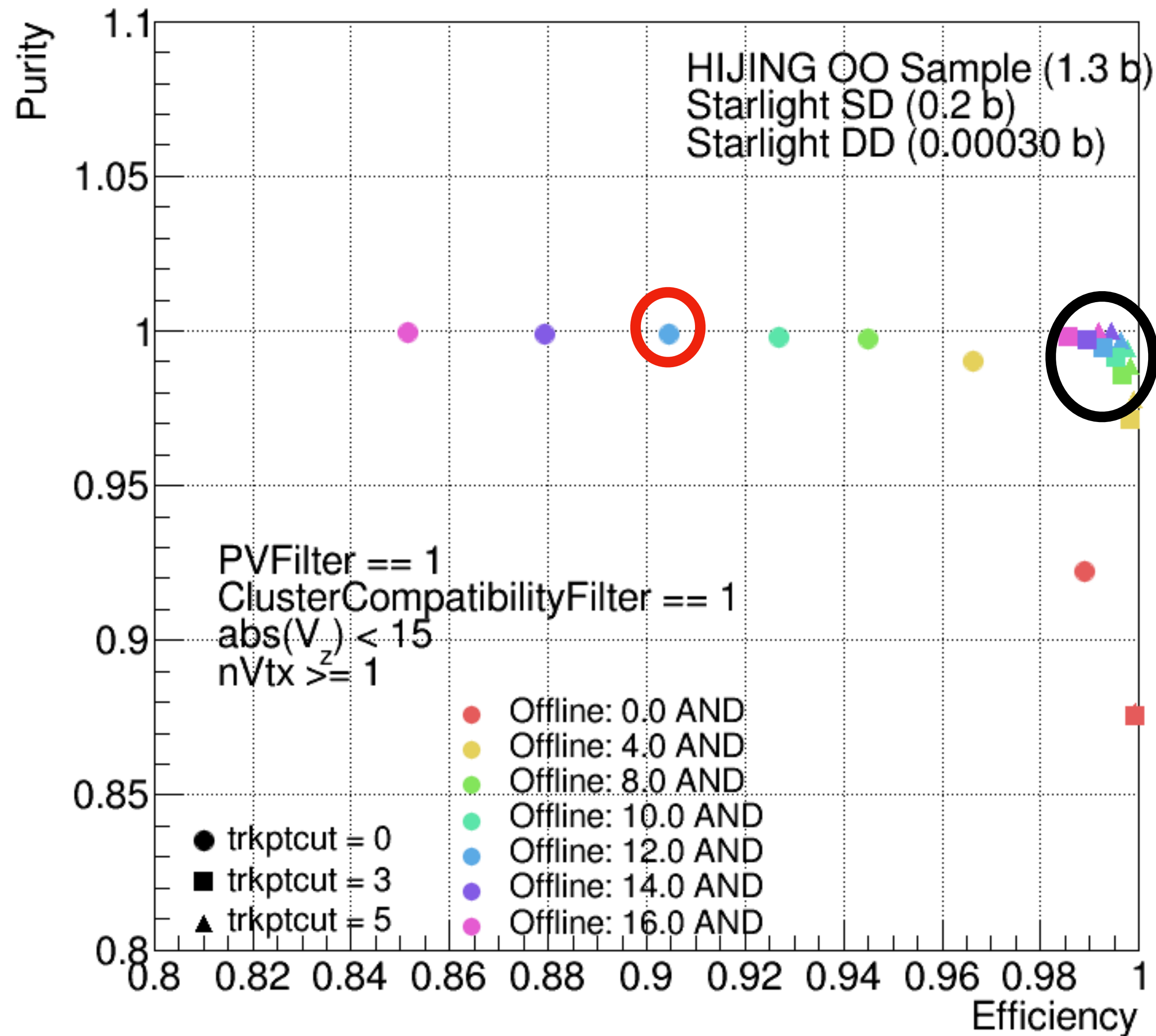
- Use a cut on the leading HF Particle Flow energy to remove contributions from noise / UPCs
- Focus analysis on tracks above 3-5 GeV for even higher purity

- Primary Vertex Filter
- Cluster Compatibility Filter
- $|v_z| < 15$ cm
- **HF Online 14 ADC “OR”**
- **HF Offline 12 GeV “AND”**
- ***Leading Track* $p_T > 5$ GeV***

**(High purity, $|DCA_{xy}| < 3$, $|\eta| < 2.4$)*



Efficiency Performance of Offline Selection: Online 14 OR

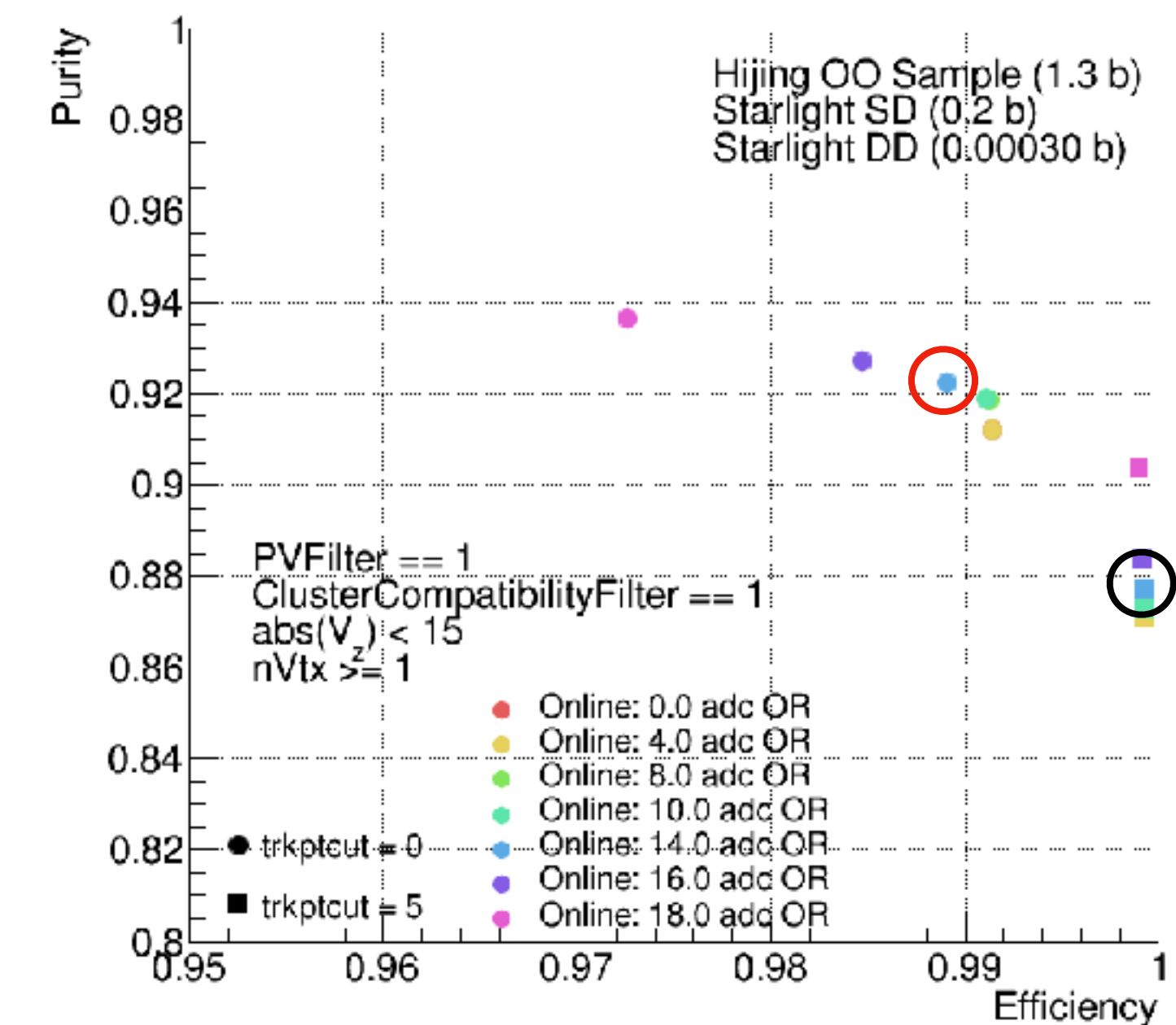


Efficiency and Purity

HF Online 14 ADC “OR”
HF Offline 12 GeV “AND”
Leading Track* $p_T > 5$ GeV

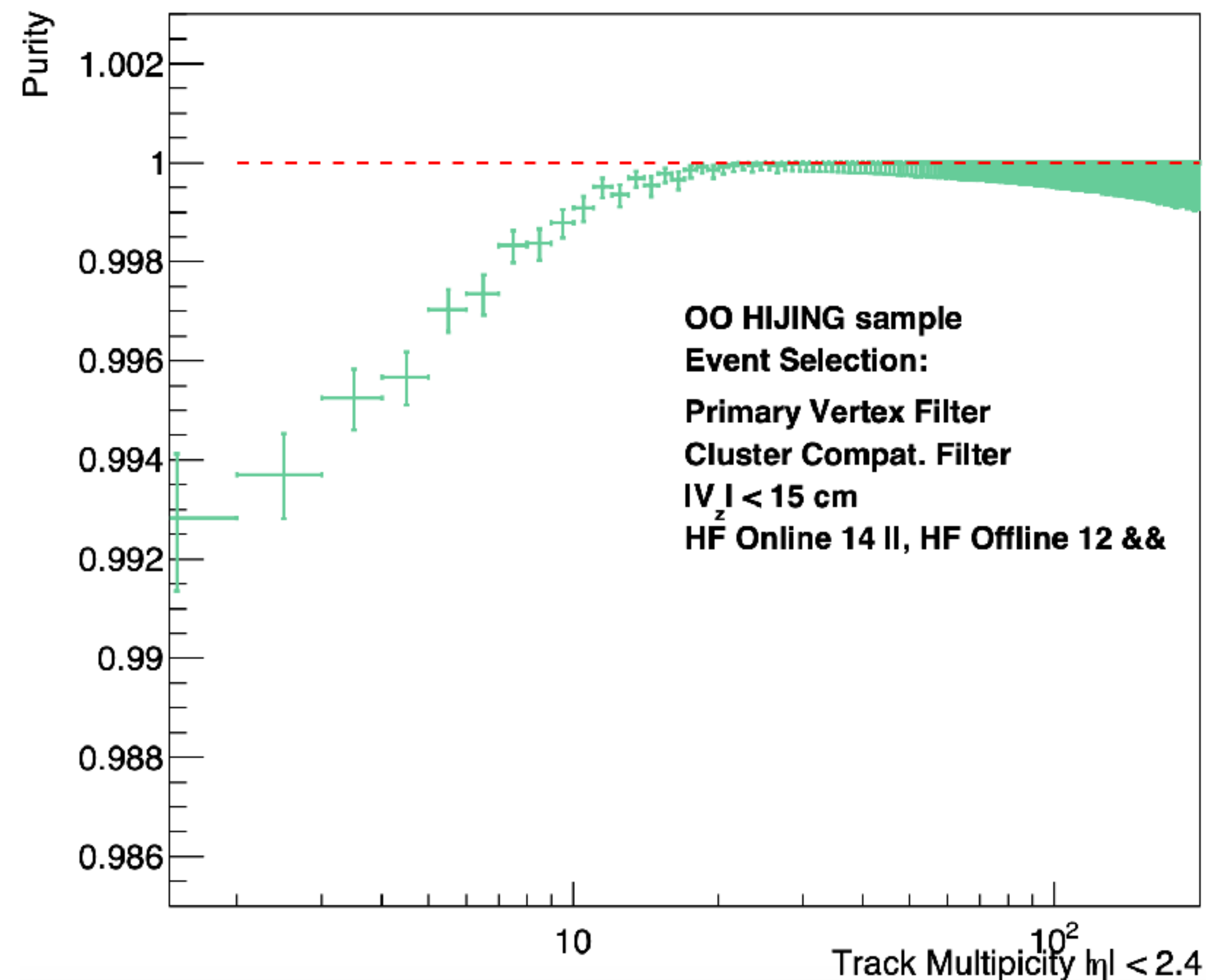
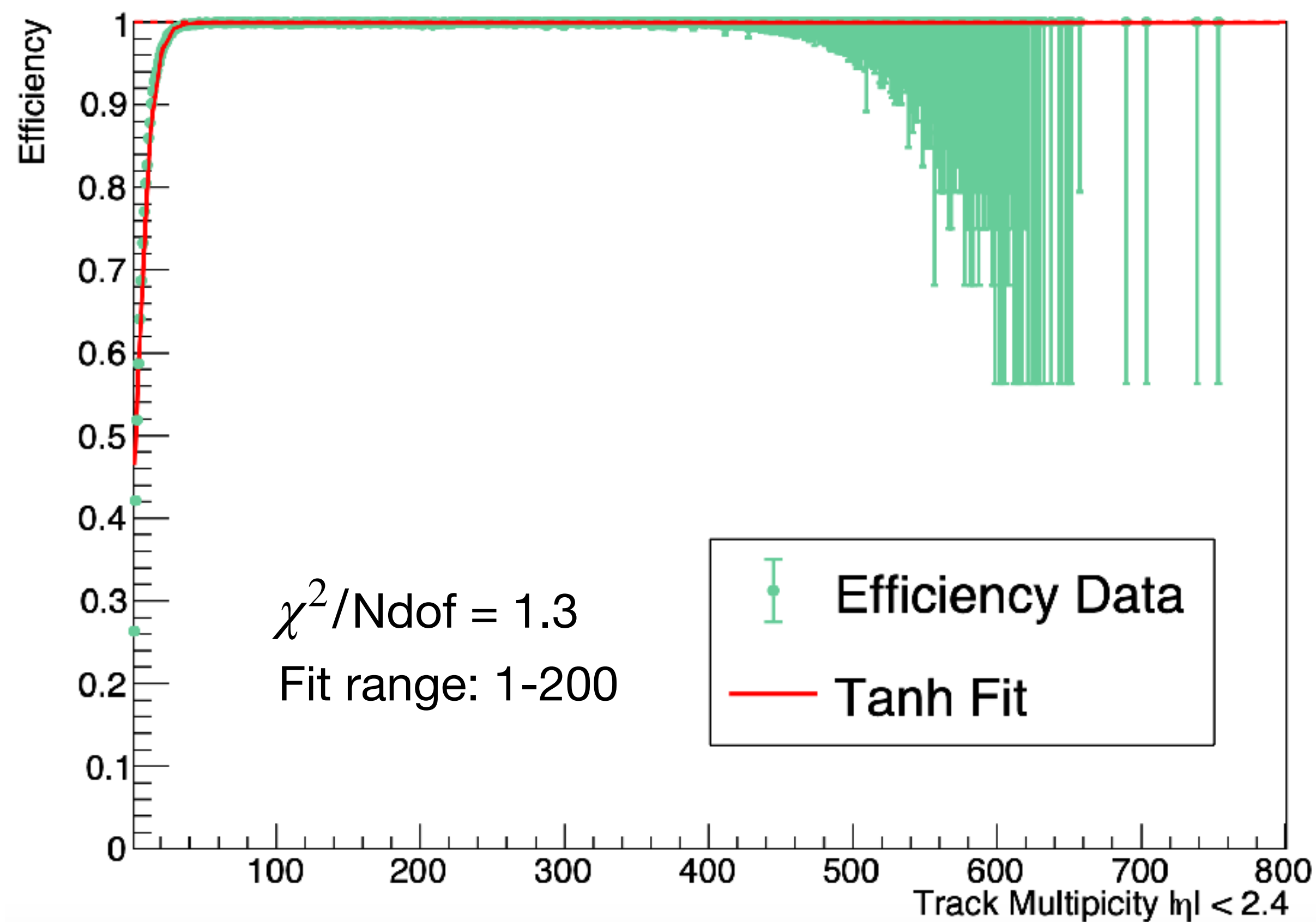
*(High purity, $|DCA| < 3$, $|\eta| < 2.4$)

Efficiency Performance of L1 Trigger (MC)



Efficiency and Purity cont.

Use the track multiplicity spectrum to derive MC-based corrections for the efficiency and purity



dN/dp_T with Correction

- dN/dp_T calculated from data sample with and without correction
- Efficiency Correction applied event-by-event to all tracks in an event

$$W = \frac{1}{\text{Efficiency(Multiplicity)}}$$

- Ratio does not entirely converge to zero due to Vz inefficiency (~1.0007 correction expected)

