

Flavour tagging performance of the New CLIC Detector

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CLIC detector Software Meeting

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Statistical uncertainty

```
Double_t TEfficiency::Normal ( Double_t total,  
                               Double_t passed,  
                               Double_t level,  
                               Bool_t   bUpper  
                               )
```

static

Returns the confidence limits for the efficiency supposing that the efficiency follows a normal distribution with the rms below.

Parameters

- [in] **total** number of total events
- [in] **passed** 0 <= number of passed events <= total
- [in] **level** confidence level
- [in] **bUpper**
 - true - upper boundary is returned
 - false - lower boundary is returned

Calculation:

$$\begin{aligned}\hat{\epsilon} &= \frac{\text{passed}}{\text{total}} \\ \sigma_{\epsilon} &= \sqrt{\frac{\hat{\epsilon}(1-\hat{\epsilon})}{\text{total}}} \\ \epsilon_{\text{low}} &= \hat{\epsilon} \pm \Phi^{-1}\left(\frac{\text{level}}{2}, \sigma_{\epsilon}\right)\end{aligned}$$

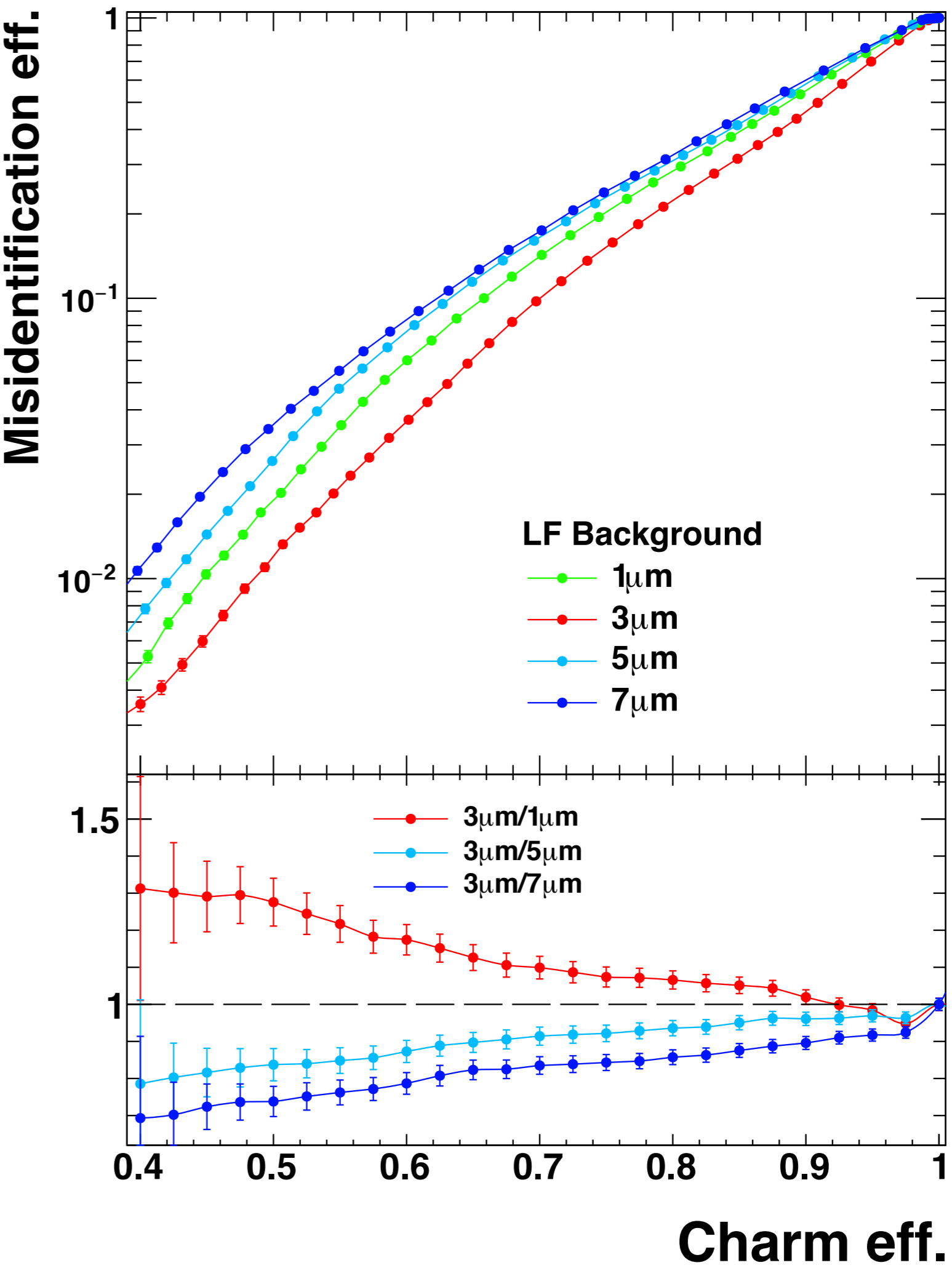
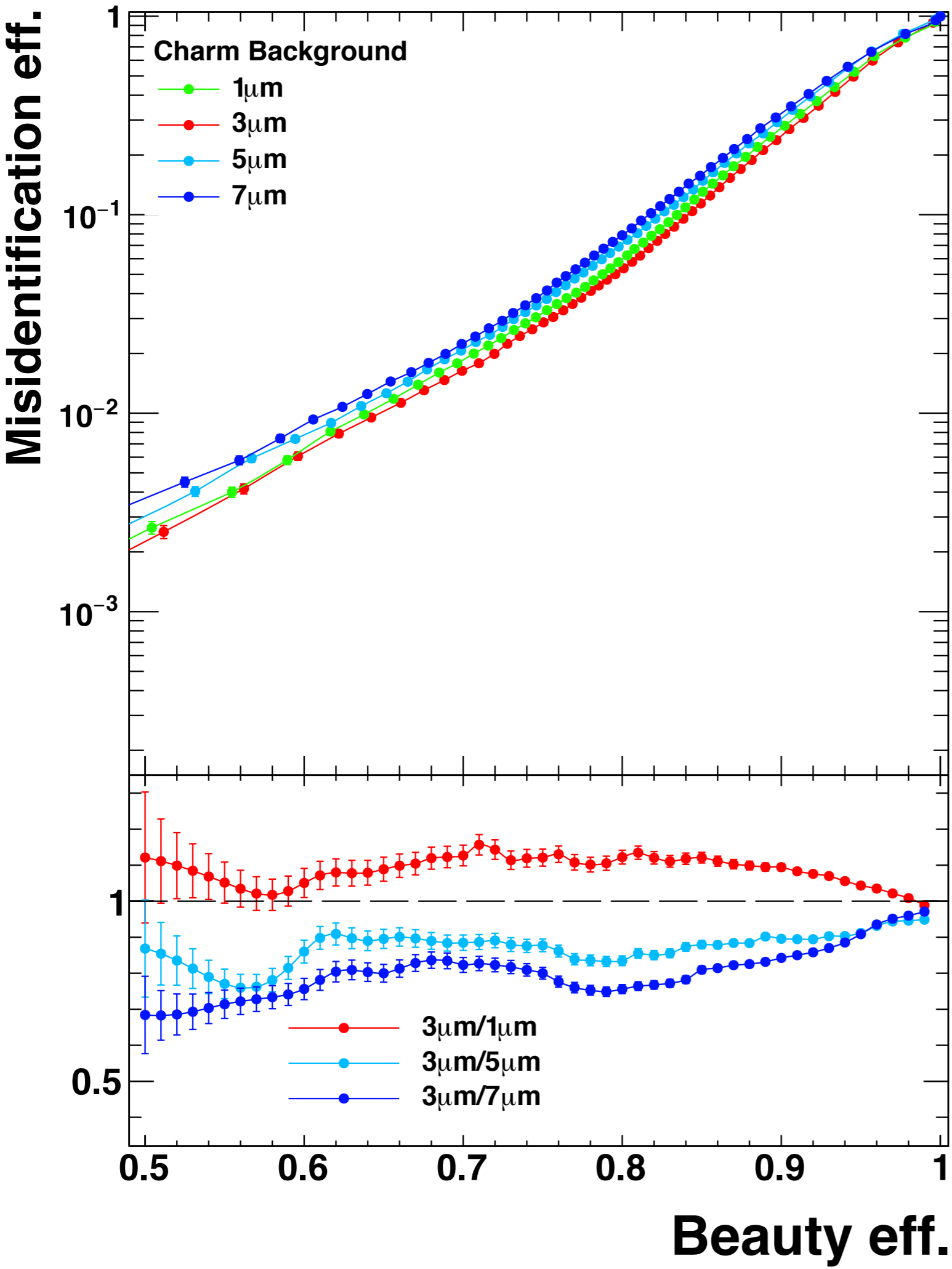
$$\sigma_{\epsilon} = \sqrt{\frac{\epsilon(1-\epsilon)}{\text{total}}}$$

Definition at line 2733 of file TEfficiency.cxx.

$$\text{Ratio} = A/B \rightarrow \delta(\text{Ratio}) = \text{Ratio} * \text{sqrt}[(\delta A/A)^2 + (\delta B/B)^2]$$

Statistical uncertainty

$e+e^- \rightarrow$ dijets at 500GeV
No $\gamma\gamma \rightarrow$ hadrons



Conformal vs Truth Tracking

$e+e^- \rightarrow$ dijets at 500GeV
No $\gamma\gamma \rightarrow$ hadrons

