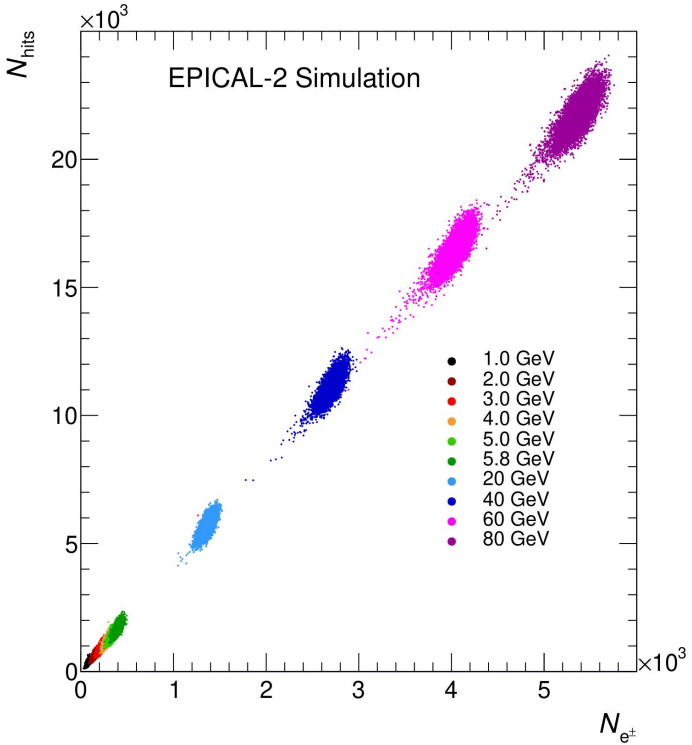
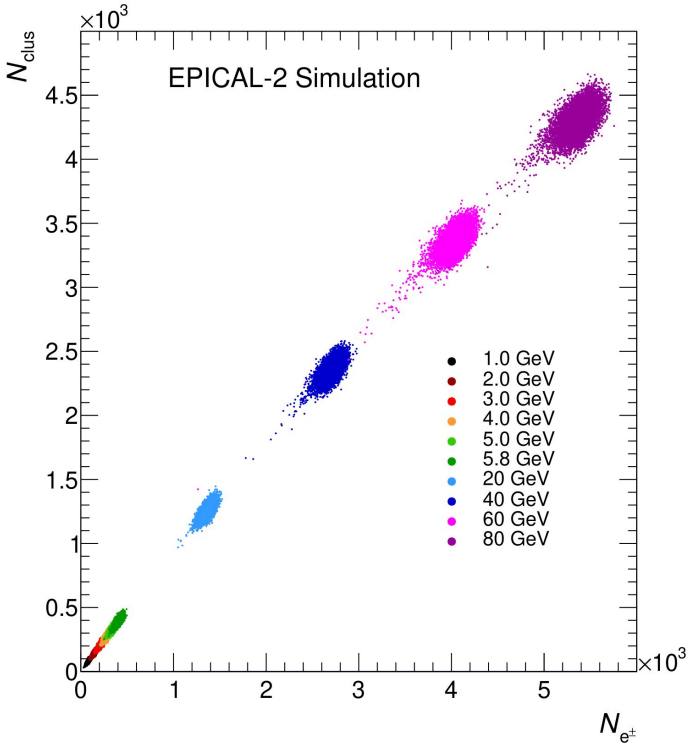
EPICAL-2 Meeting - 23.10.24

Correlation of $N_{e\pm}$ and $N_{hits/clus}$

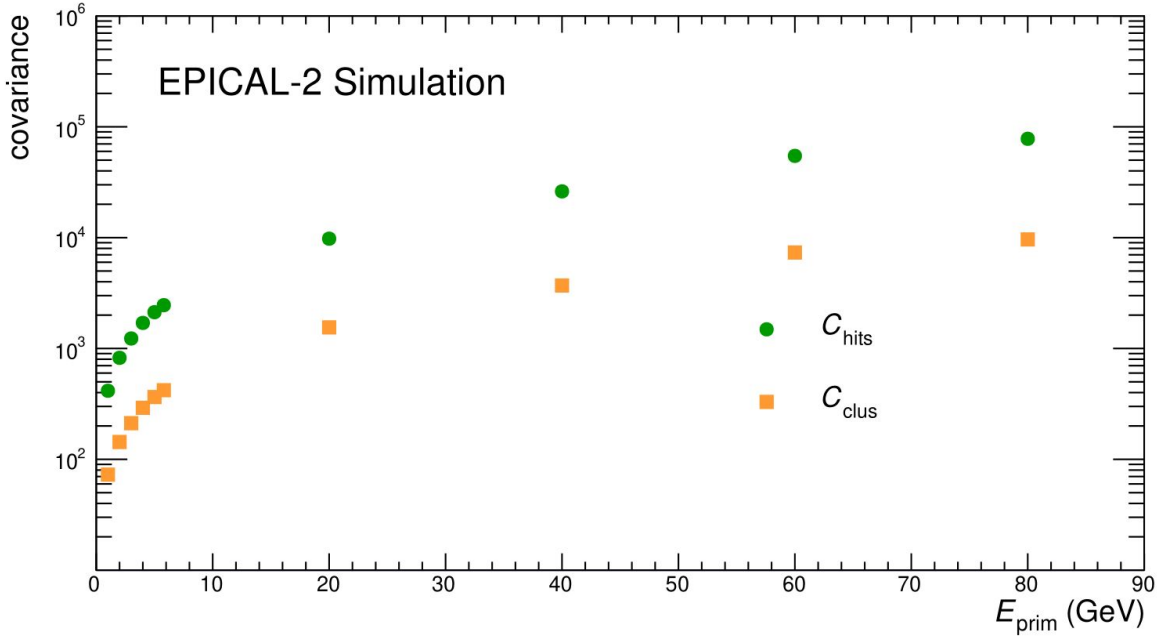
Jan Schöngarth

$N_{e\pm}$ vs. $N_{hits/clus}$





Covariance



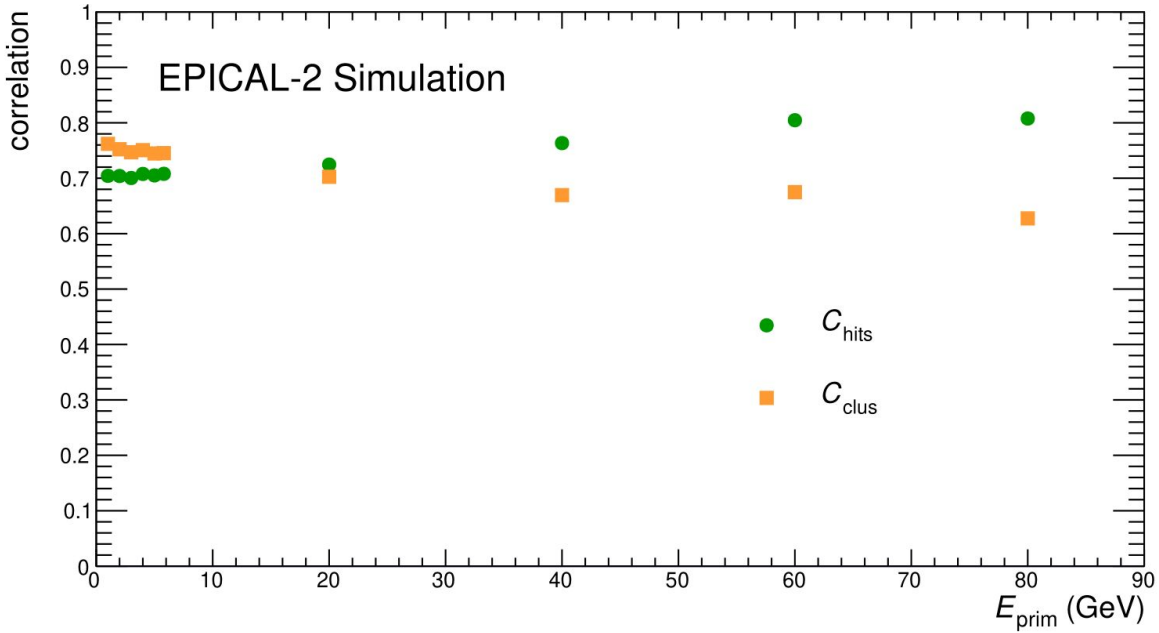
$$cov(x, y) = \langle xy \rangle - \langle x \rangle \langle y \rangle$$

$C_{hits} = \mathrm{cov}(N_{hits}, N_{e\pm})$

$C_{clus} = \mathrm{cov}(N_{clus}, N_{e\pm})$

- covariance increases with energy in both cases

Correlation



$$cor(x,y) = \frac{cov(x,y)}{\sigma_x \sigma_y} = \frac{\langle xy \rangle - \langle x \rangle \langle y \rangle}{\sigma_x \sigma_y}$$

$C_{hits} = cor(N_{hits}, N_{e\pm})$

$C_{clus} = cor(N_{clus}, N_{e\pm})$

- below 20 GeV strongest correlation with counting clusters
- correlation of N_{hits} with $N_{e\pm}$ increases with energy

$N_{e\pm}$ vs. $N_{hits/clus}$