



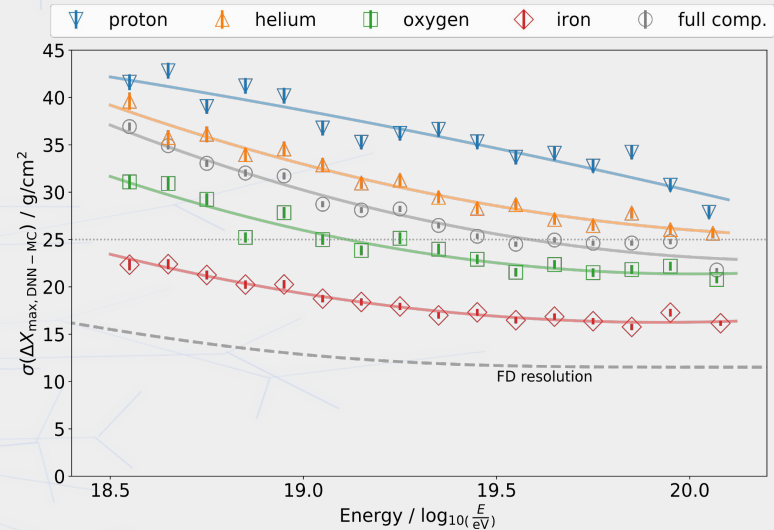
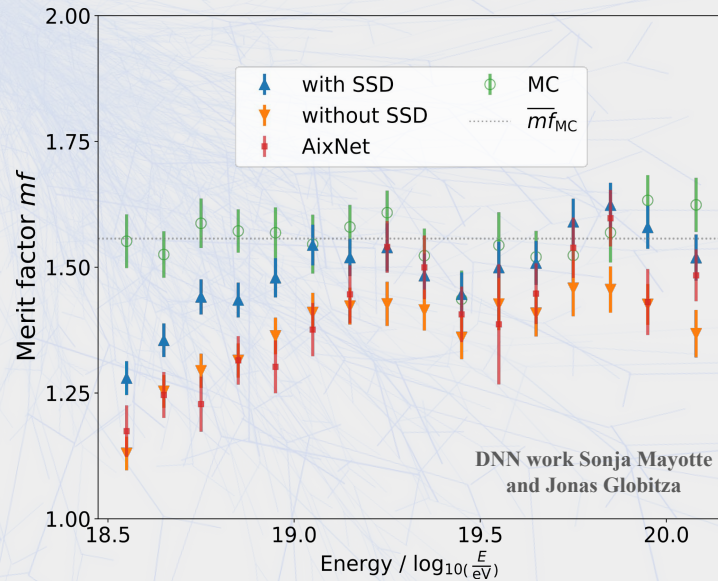
Mass Comp with WCD + SSD

GCOS Meeting
Thursday, July 14th

E. Mayotte

WCD + SSD: Mass Sensitivity expectations

WCD only vs WCD + SSD Xmax reconstruction



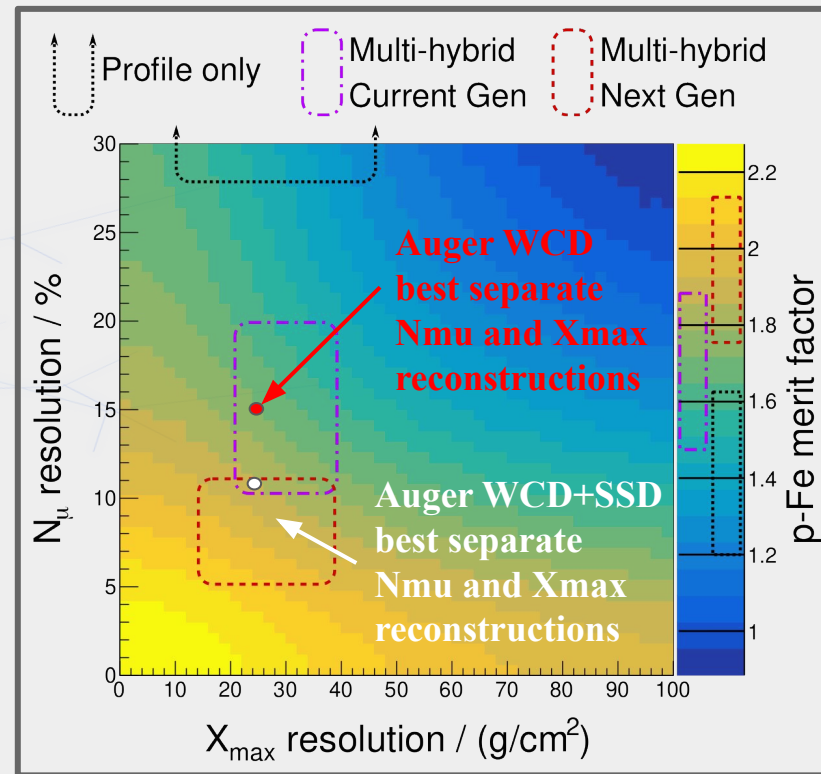
No strong resolution improvement, only gain with Xmax reconstruction is theoretical
merit factor max hit at lower energy (10^{19} eV vs $10^{19.3}$ eV)

Take away: alternative observable needed for high mass resolution

WCD + SSD: Mass Sensitivity expectations

Current candidates for alternative observables

- **Independent R_{mu} / X_{max} reconstructions**
 - Current best: $N_{mu} \sim 11\%$ & $X_{max} 24 \text{ g/cm}^2$
 - Can cross-calibratable with other detectors
 - Possibly reach MF of 1.9 with SSD + WCD
- **DNN merit factors optimization:**
Best seen so far ~ 2.2 for $E > 19.2 \text{ IgE}$
 - May be abusing MF definition
 - No cross calibratable value available
 - May represent maximal attainable values
- **DNN direct rec of LnA**
 - Currently impeded by Hadronic model uncertainties
 - Would benefit from MC production which is flat in LnA with full primary population



Situation expected to greatly improve over lifetime of AugerPrime