

Improving HFT signals

- Via statistics: \sqrt{N}
- Via TPC performance: resolutions^2 for 2-particle decays
 - Each % of performance worth ~ 3 days stats in 10 weeks
 - Performance possibilities:
 - Efficiency of matching of TPC tracks to HFT
 - Momentum resolution, dominant contributor to invariant mass widths
 - % level improvements in each possible through improved understanding of the TPC alignment, static field distortions, and luminosity-dependent distortions
 - Magnetic field off presents other (undesirable) issues with TPC performance
 - Cosmic rays help factorize what's static **[done]**
 - Magnetic field polarity flips helps factorize what's alignment **[not done]**
 - STAR now utilizing small-acceptance high precision GEM calibration devices outside the TPC to improve measurements of TPC alignment and field distortions
 - One day of cosmics needed to see an effect in track projections
 - Several days (to measure the p_T dependence) needed to understand an effect
- Request: 5 days of cosmics with STAR magnetic on and polarity flipped

