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System Size, Energy, and Centrality Dependence of the η to π^0 Ratio YUANJIE REN, AXEL DREES, Stony Brook University — Data on the ratio of η to π^0 with respect to transverse momentum p_T from different experiments, different collisions systems (p+p, p+A, as well as A+A), and different center of mass energies $\sqrt{s_{NN}}$ are collected and compared to each other. We find that the ratio is surprisingly similar in all systems. We characterize and quantify the universality of the ratio and determine an empirical function for $\frac{\eta}{\pi^0}(p_T)$ including its systematic uncertainties. With this function we can derive the invariant yield for the η meson based on π^0 measurements. Our procedure holds the promise to be more precise than the method of scaling with transverse mass (m_T), which is currently used in the PHENIX experiment. The new approach may reduce the systematic uncertainty on ongoing low p_T direct photon measurements by PHENIX. In this talk we will present our method and the results.

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