Santa Fe
Jets and Heavy Flavor Workshop
January 11-13, 2016

Contribution ID: **77** Type: **not specified**

B and J/psi mesons in jets using SCET

Wednesday, 13 January 2016 10:00 (30 minutes)

We use the framework of Soft-Collinear Effective Theory (SCET) to study the production of B and J/psi mesons in jets. We focus on jets where the angularity, a class of jet-shape variable, of one of the jets is measured. Using factorization formulae provided by SCET, we calculate the next-to-leading-log-prime (NLL') resummed cross-section for e+e- $\longrightarrow$ 2 jets where one of the jets contains a B meson and e+e- $\longrightarrow$ 3 jets where a gluon jet contains a J/psi. We express our analytic cross-sections in terms of fragmenting jet functions (FJF), which give the probability that an identified hadron in a jet carries a fraction z of the energy of a jet with measured angularity tau_a. FJF's can in turn be written as convolutions of renormalization-group-evolved fragmentation functions (FF) and perturbatively calculable matching coefficients. We calculate these matching coefficients to next-to-leading-order (NLO) accuracy for the jets where angularity is measured. We compare our analytic distributions for z and tau_a with predictions from the Pythia and Herwig Monte Carlo event generators. For B meson production we find consistency between analytic and Monte Carlo results. For J/psi production, we discuss how the Monte Carlo must be modified in order to properly treat the fragmentation of g -> J/psi in 3 jet events

Presenter: BAIN, Reginald (Duke University)

Session Classification: Session 9