

ADDITIONAL (RELATED)
POINTS ON “ISSUES FOR HF
MODELING”



General Issues for HF modeling

- treatment of HF masses:
 - Interaction with PDF choices and 4- vs 5-flavor scheme
 - Do we want / can have a consistent treatment of quark masses between ME and PS
 - Low pT processes: gluon splitting rate due to $m_b, m_c \rightarrow$ should we consider variations of this as systematic uncertainty
- Definition of heavy flavor jet
 - Parton vs particle
 - DR vs ghost matching
 - B-hadrons vs B-decay products
- Fragmentation functions:
 - Propagation of uncertainties from LEP
 - Choice of fragmentation function parameterization
 - Degree of freedom for ME-shower matching
- What are the things we can and should measure at the LHC to validate the modeling of HF fragmentation (CMS has already a good list of things done...)
 - $j \rightarrow b\bar{b}$ (a la CMS)
 - B-Fragmentation functions in $t\bar{t}$ events
 - Charm fragmentations functions (in $W+d$)

More on HFOR

- Aside for the tt-bb case, when do we have to explicitly care for HFOR and how much is handled by the ME+PS matching?
 - Alpgen (MLM)
 - MG5_aMC@NLO 4-flavor (MLM or CKKW-L)
 - MG5_aMC@NLO 5-flavor (MLM or CKKW-L)
 - Powheg
 - Sherpa - done internally
- If and when this has to be applied, will need to sort properly the (re-)categorization of the events and their scaling (long-standing discussions in the past about how to do that...)