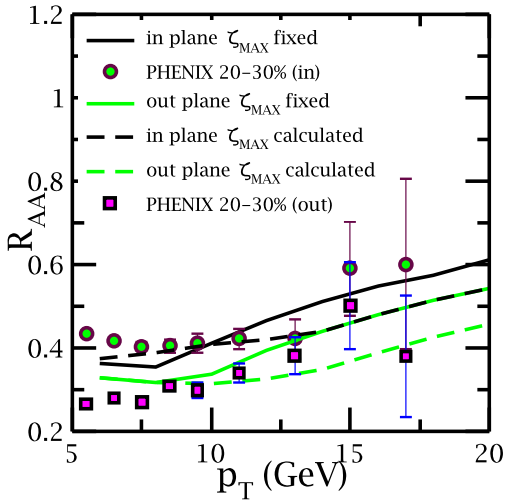
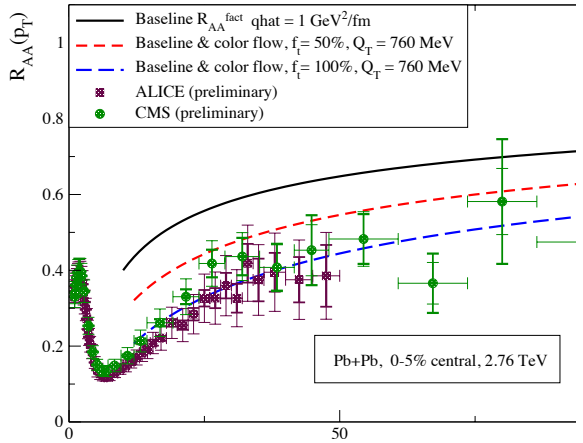
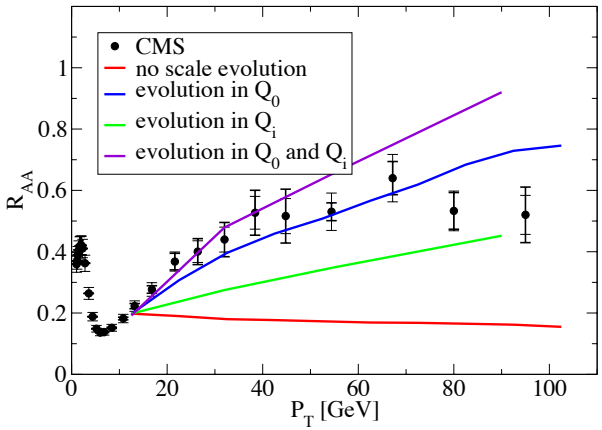
My questions for the audience

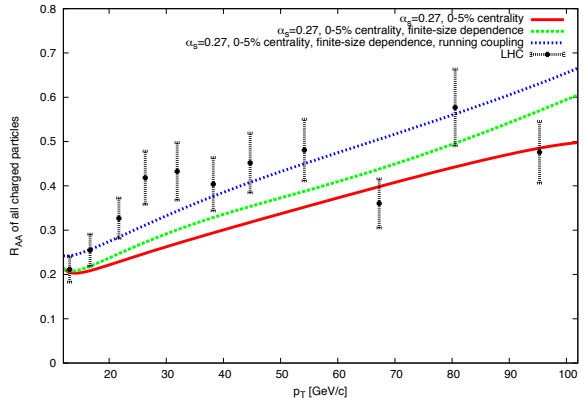
- What are the differences between physical processes in event generators for heavy-ion collisions? Do any reach agreement with data by way of very different processes (R_{AA} of charged hadrons)?
- Are HI event generators keeping up with theoretical advances (NLO, running coupling, recoil)?
- What physical processes pose the most serious difficulties for MC integration into hydro models of HICs?

One example: R_{AA} of hadrons









One example: R_{AA} of hadrons

While agreeing on QCD and the importance of a finite-temperature medium for $\sim 10\ \mathrm{fm/c}$, the evolution of high-p_T partons is modelled in very different ways:

- Finite-temperature rates for partons at low-Q^2
- Modified partonic evolution from high- to low-Q^2
- Softening caused by color flow into the medium

Caron-Huot and Gale, 2010

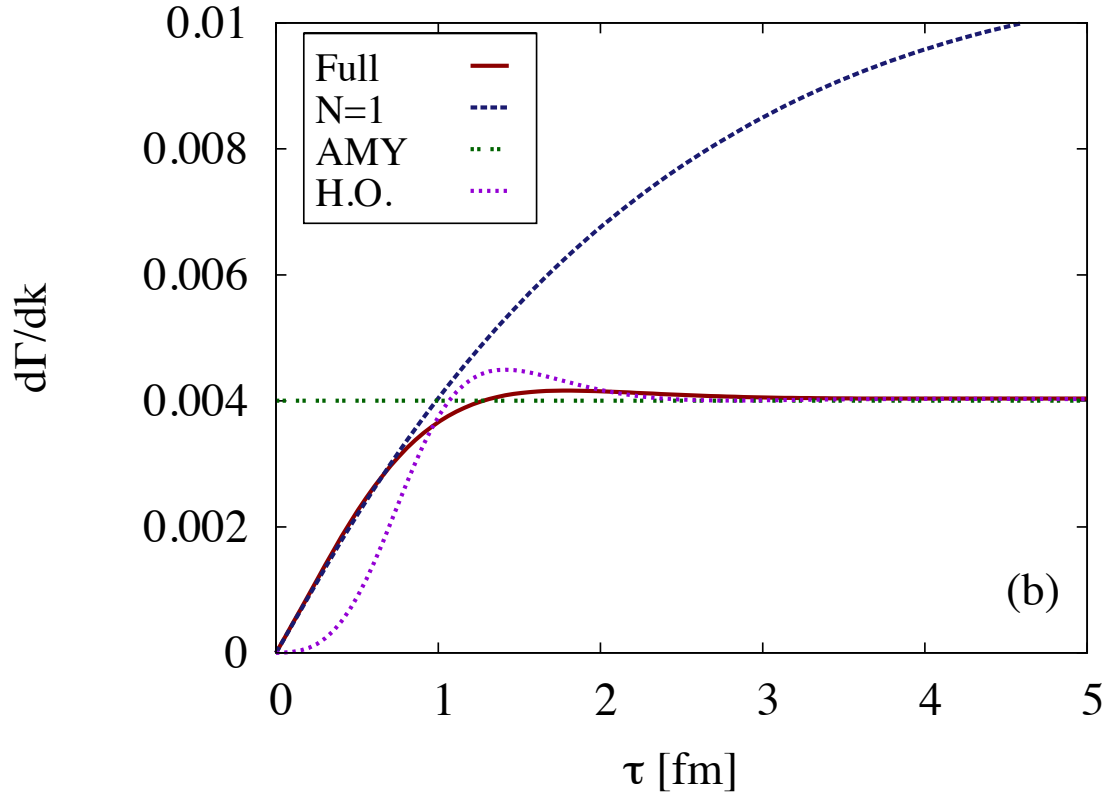


Figure: $d\Gamma/dk$ for an 8 GeV gluon to be radiated off of a 16 GeV quark at $T = 0.4$ GeV.

What physical processes are difficult?

Monte Carlo integration relies on sampling positive-definite squared matrix elements. In general, *interference* causes problems:

- Coherence effects in jet production (p+Pb data?)
- Interference of medium- and vacuum-splittings

Full NLO rates are also positive-definite, but possibly with more complicated phase spaces for the multi-particle final states.

Questions raised by today's experimental talks

Bathe: does the magnitude of the background subtraction from ZYAM vary significantly across collision systems?

Angerami: what might cause the (possible) enhancement of fragmentation at $z = 1$? These would be jets of a single hadron? Could this point to "jet-trimming" or could this be caused by another mechanism?