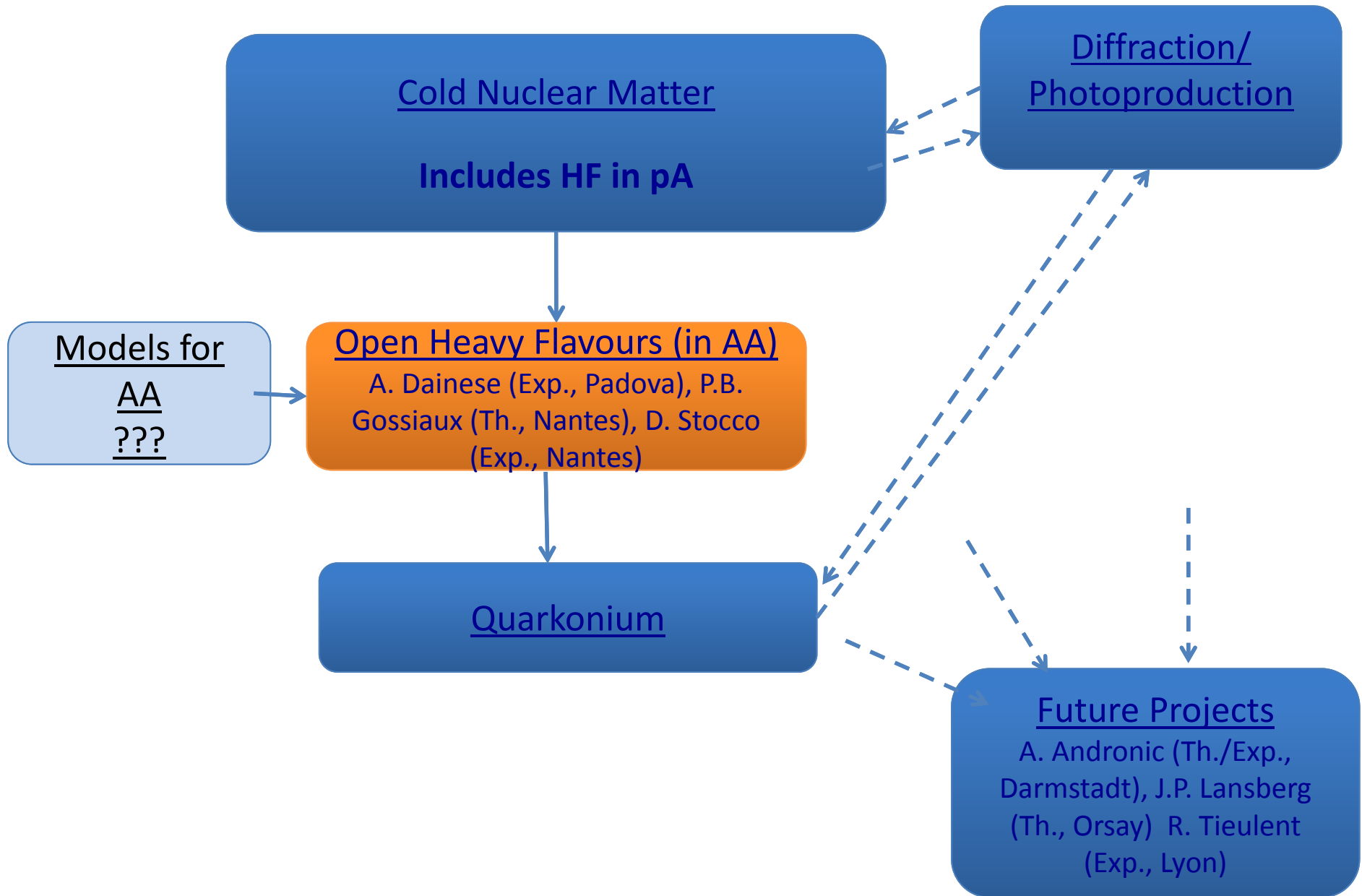


Open Heavy Flavor

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Sapere Gravis



Review of experimental data

- By observable rather than by experiment
 - Describe in parallel RHIC and LHC, compare where possible
- Possible layout:
 1. HF production in pp and cmp with pQCD (important energy interpolations of reference at LHC and as input for models)
 1. Cross sections
 2. Mult dependence, MPI
 2. RAA measurements
 1. Inclusive measurements with leptons
 2. D and B measurements (incl. b-jets)
 3. Discuss also RpA for comparison (overlap with CNM chapter?)
 3. v_2 measurements
 1. Same structure as above
 4. HF correlations (this part could also come after the models, because the motivation needs a discussion of e.g. radiative vs. collisional...)
 1. Current measurements and future prospects

Review of Models

The writing process

"The chapter writing is coordinated by the conveners, who will propose an outline and *invite for contributions by additional authors*".

Need for some structure and some collaborative effort (could be the seed for future common work)

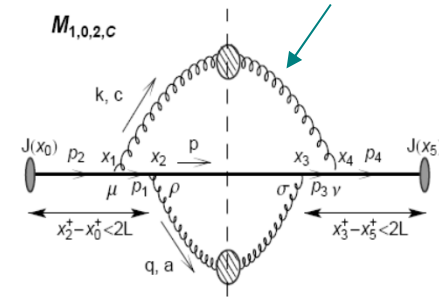
From ISMD2011

The weak to strong axis for HQ

“Naive” pQCD
(WHDG, ASW,...)
 $\hat{q} \approx 1 \text{ GeV}^2/\text{fm}$

“Realistic” pQCD

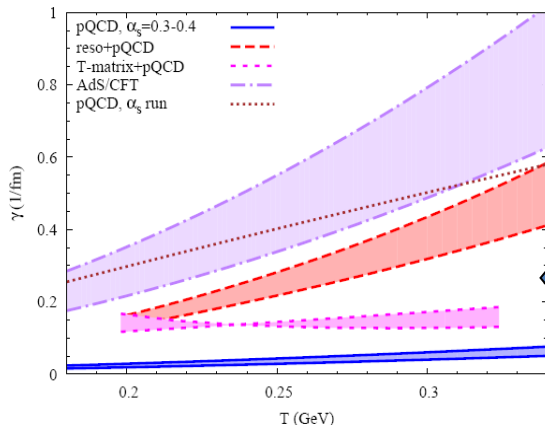
Beyond the static scatterer limit: M. Djordjevic, Preprint arXiv:0903.4591 [nucl-th] (2009) and previous work with U. Heinz



Running α_s (Peshier, Gossiaux and Aichelin, Uphoff)

Distorsion of heavy meson fragmentation functions due to the existence of bound mesons in QGP, R. Sharma, I. Vitev & B-W Zhang 0904.0032v1 [hep-ph]

Bound states diffusion or non-perturbative, lattice potential scattering models (see R. Rapp and H Van Hees 0903.1096 [hep-ph] for a review)



from Rapp & Van Hees 0903.1096

Lesson n°1:

Several models containing either non perturbative features or tunable parameter are able to reproduce the HQ data, but many questions remain... and how to reconcile them all stays a challenge

ADS/CFT
(akamatsu et al)

Some tentative sketch of the chapter (≈ 25 pages ?)

Introduction

Review of observables (exp)

Then, for each class of models (4-5 ?), standardized presentation

Invited contributions

Critical Analysis, Tentative answers to “fundamental” questions, conclusions and perspectives

Invited contributions (open for discussion)

Main ingredients of the model ($d\sigma/dp_T$, HF Eloss, CNM effects, AA modelling,...)

Benchmark results (dE/dx in infinite medium, $\Delta E(L)$, Quenching factor,...)

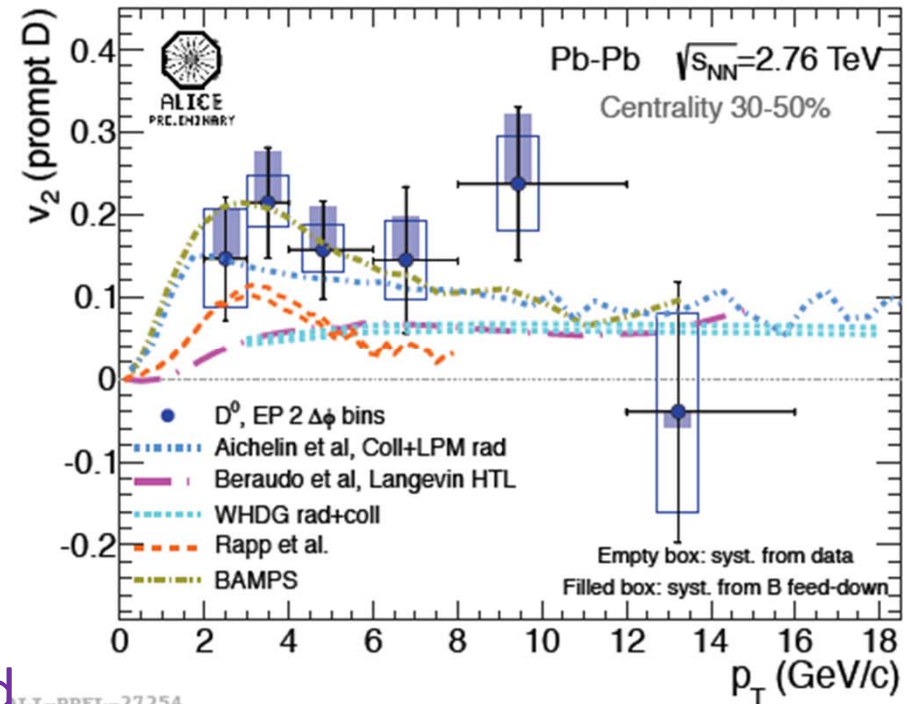
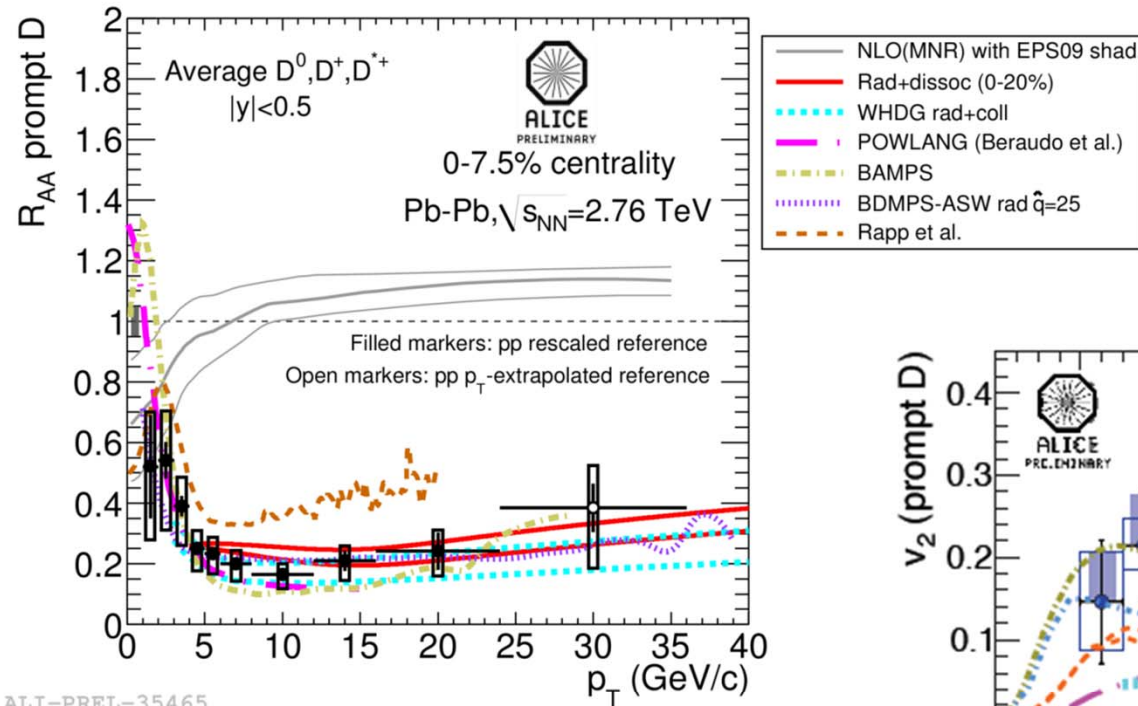
Successes and failures wrt exp. Data

Analysis: Collect for each model a breakdown of the role of the various effects, Eg:

- results w/ and w/o coalescence (for the models that include it)
- results with rad-only and coll-only (for the models that include both)
- results with and without colour charge effect in rad E loss
- results with same "quark mass" for c and b in the E loss mechanism (both rad and coll), to highlight which part of the R_{AA}^D vs R_{AA}^B difference is directly related to mass-dep of energy loss
- ...

Mandatory improvements

Beyond SaporeGravis



Need for some *automated* measurement of the agreement btwn models and data, with input/access from both parties and relying on standard methods of statistical analysis