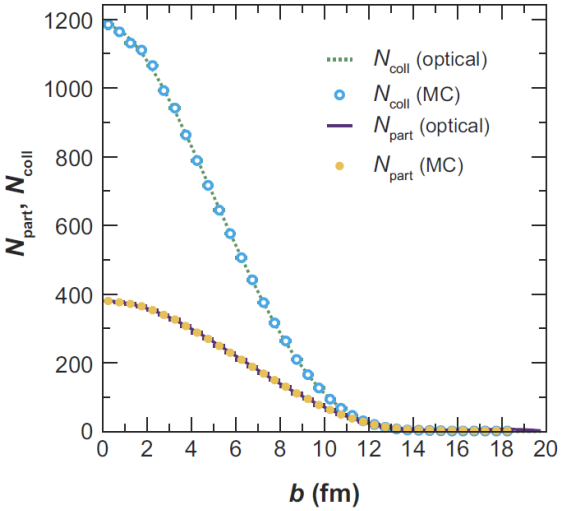
チュートリアル研究会
基礎セッション

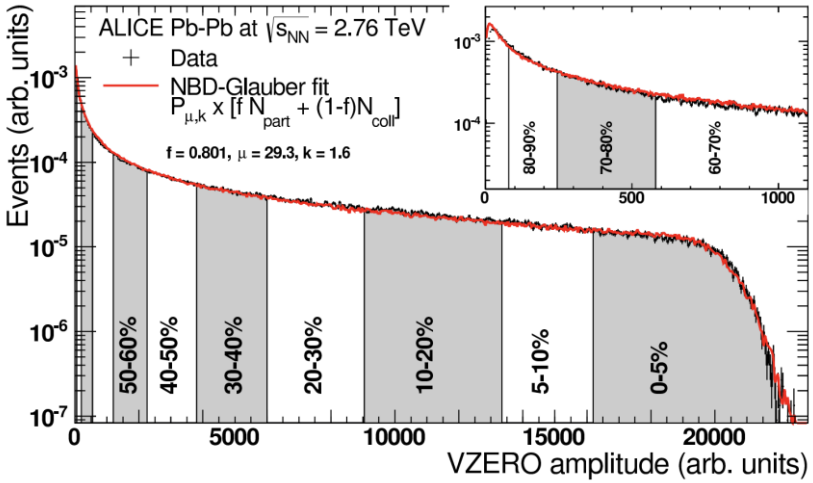
講演内容

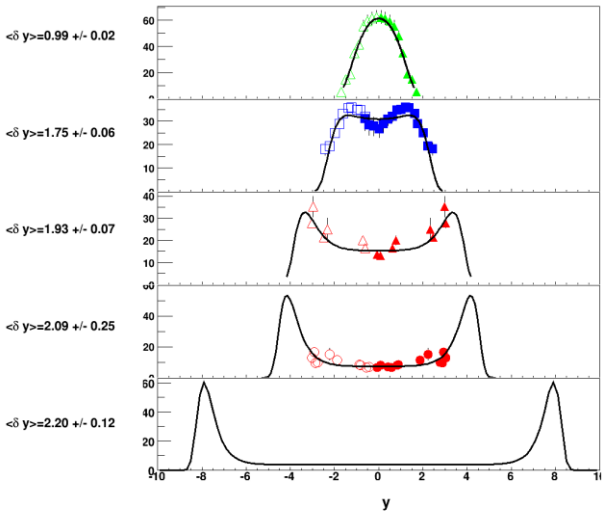
- ジオメトリ・グラウバー・基本変数
- 初期条件・CGC
- フリーズアウト
- 流体・フローv_n
- ハドロン化(low pT, high pT)
- 格子ＱＣＤ
- RAAとジェットクエンチング
- 重クォーク
- クォーコニウム
- 光子
- レプトン、カイラル対称性とハドロン媒質効果

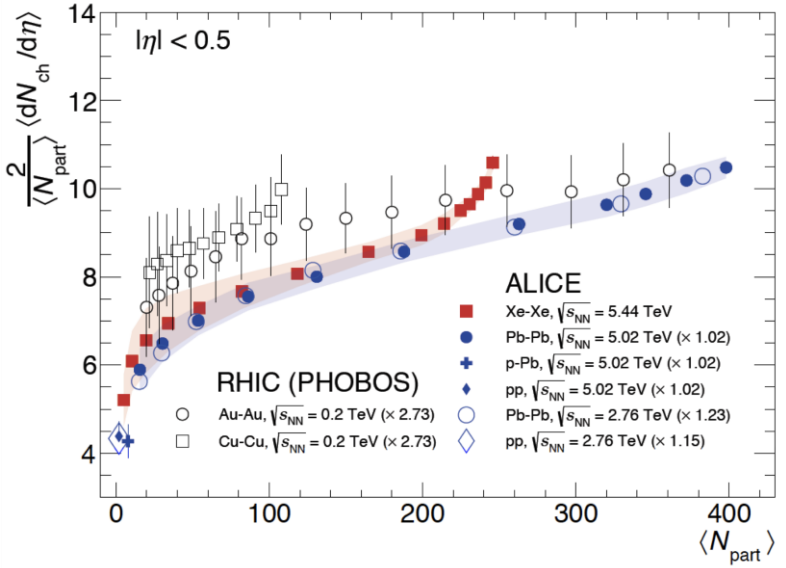
ジオメトリ・グラウバー・基本変数

- Npart, Ncoll、中心度、Multiplicity、バリオンストッピング



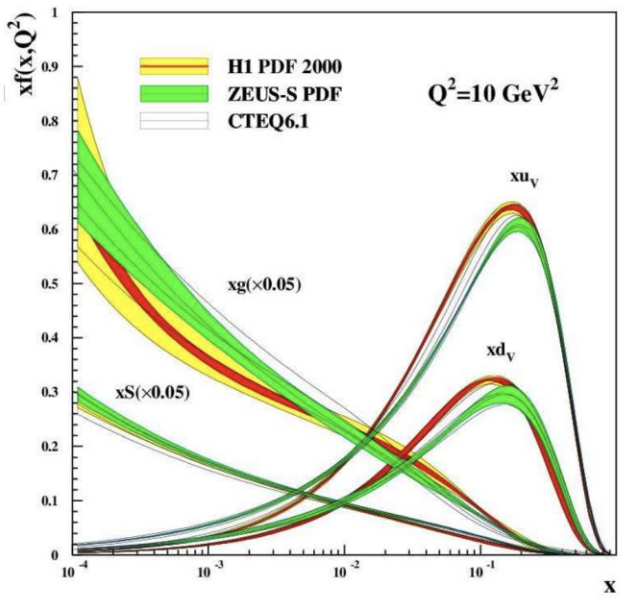


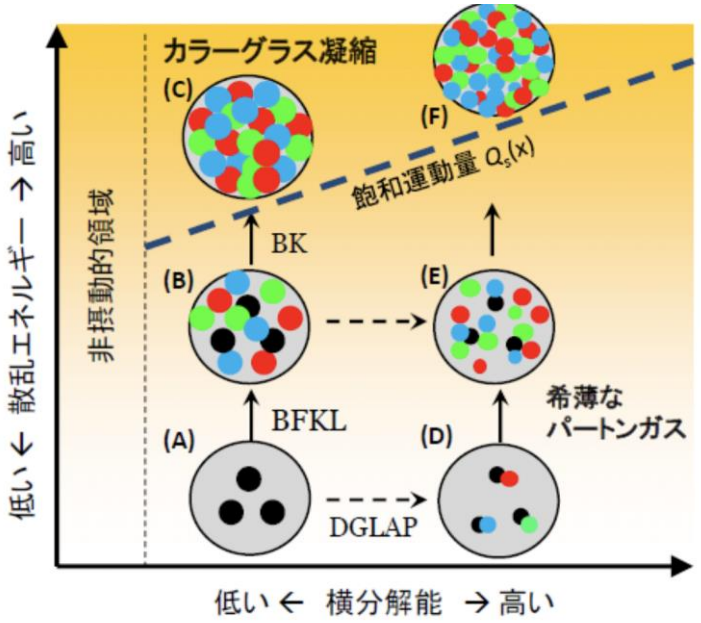




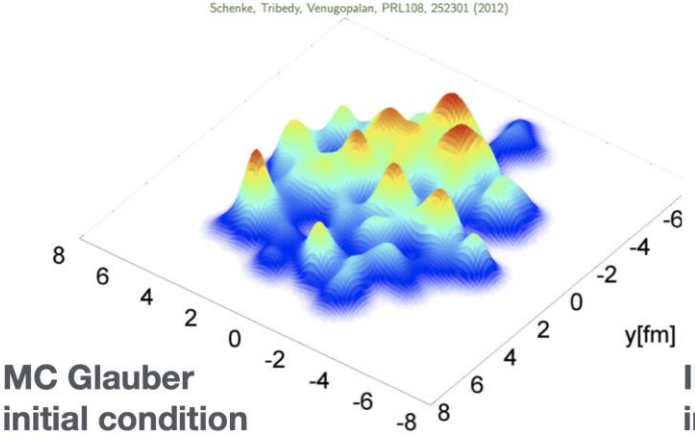
初期条件・CGC

- パートン分布、グルーオン飽和、ゆらぎ

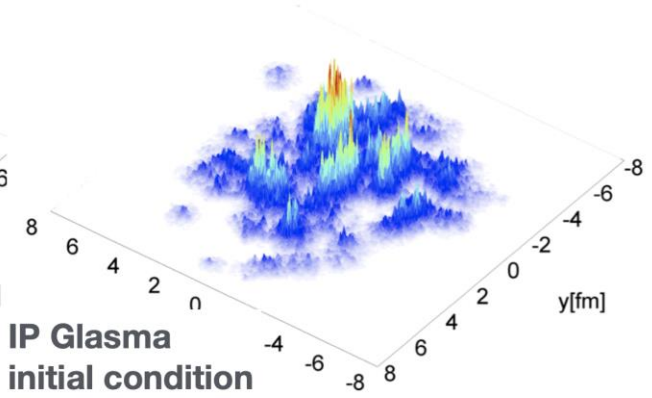




Schenke, Tribedy, Venugopalan, PRL108, 252301 (2012)

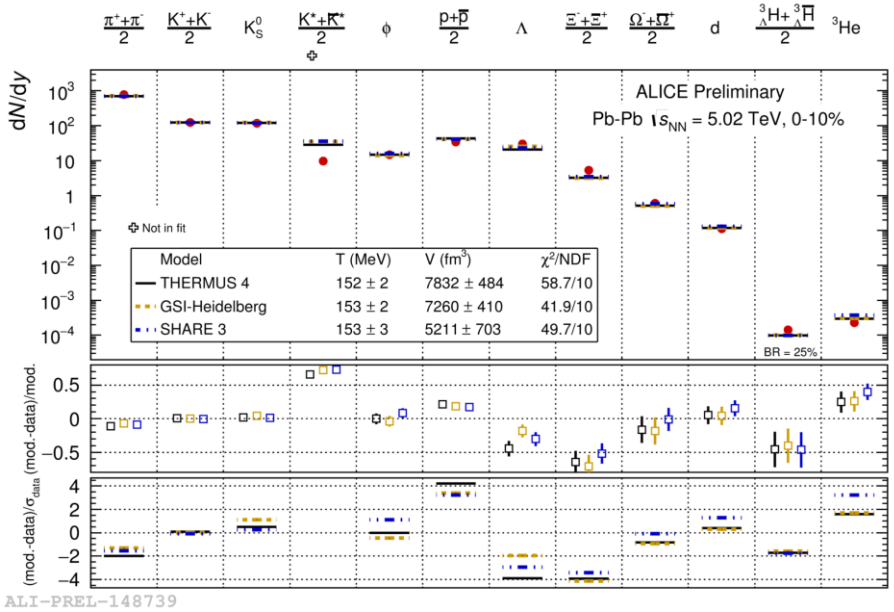


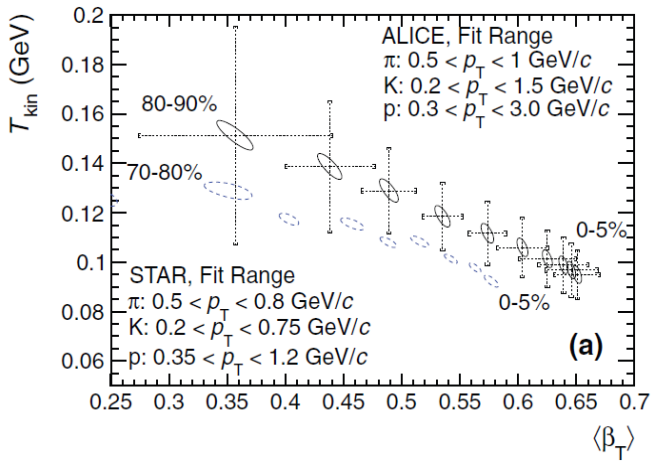
Schenke, Tribedy, Venugopalan, PRL108, 252301 (2012)

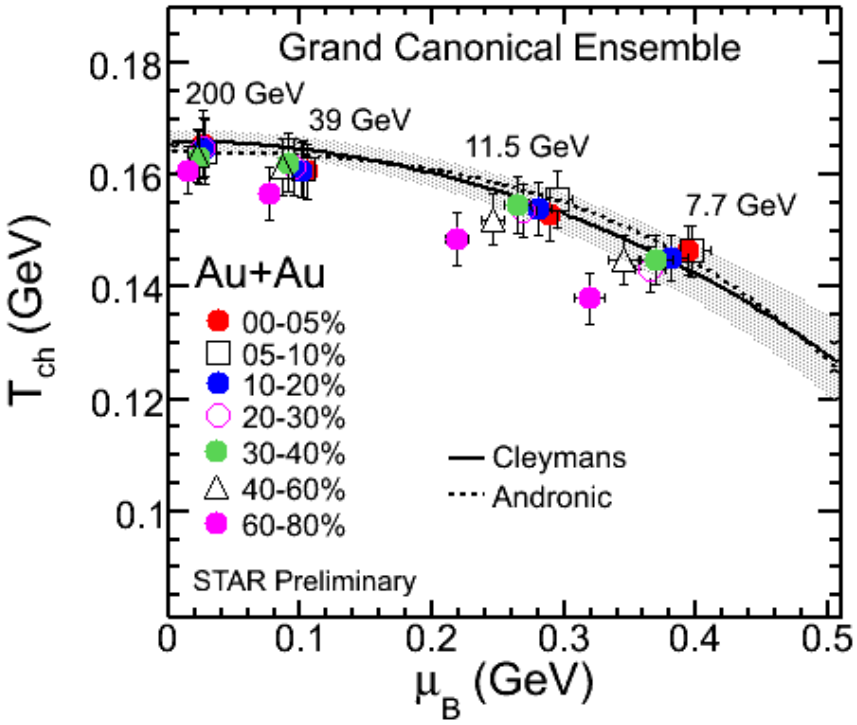


フリーズアウト

- 運動学的凍結(blast wave)と化学凍結

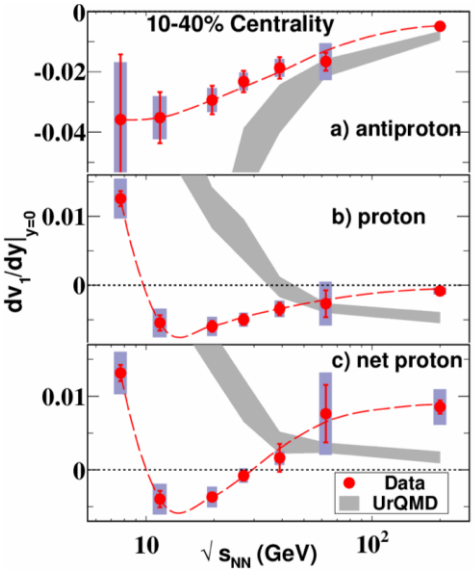


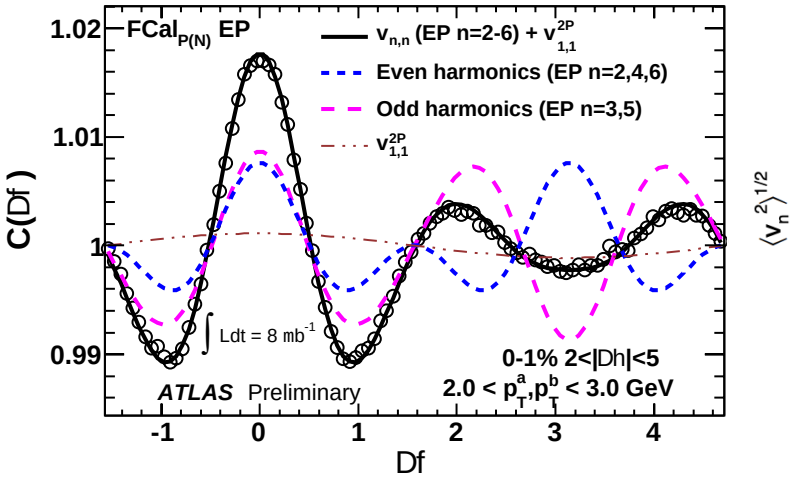


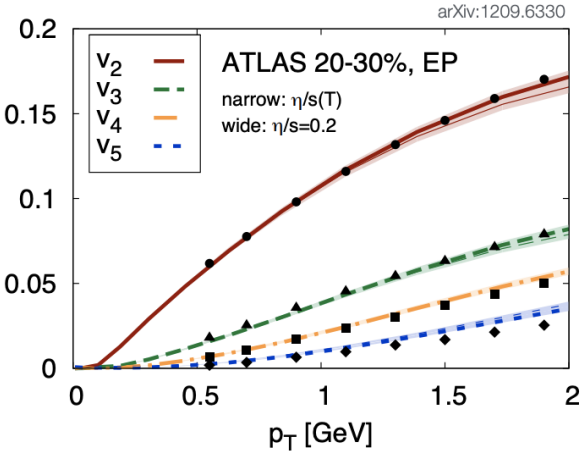


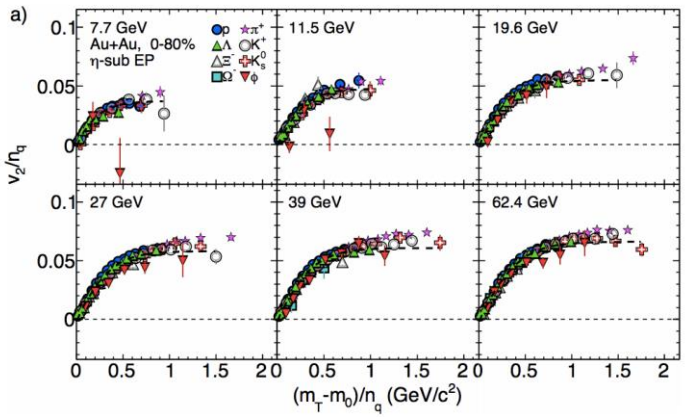
流体・フロー(v_n)

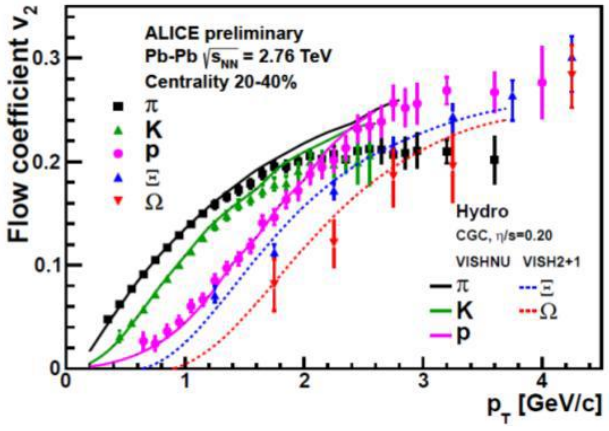
- 流体の基礎(理想流体、粘性流体、揺動流体)
- v1, v2, 高次フローと ε_n

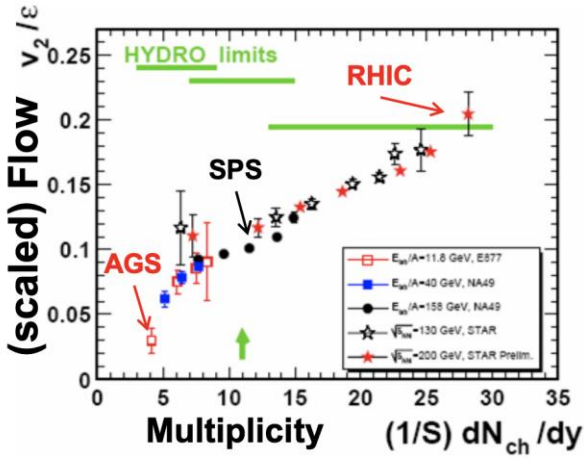






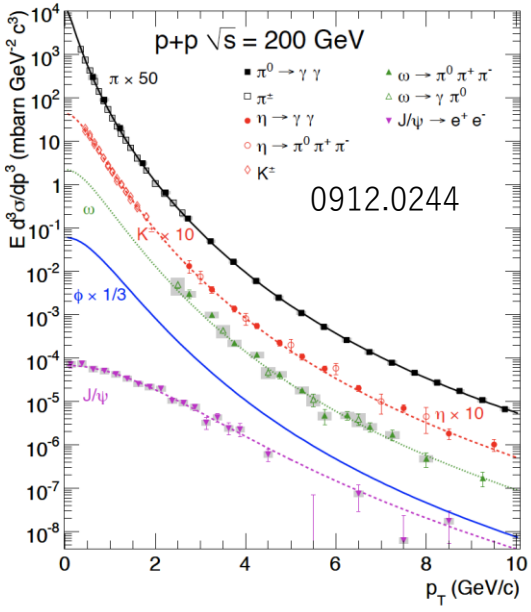


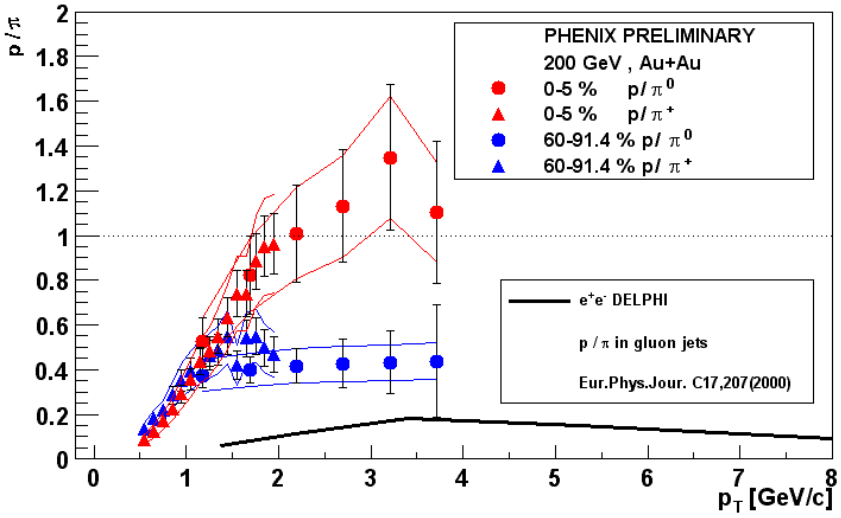


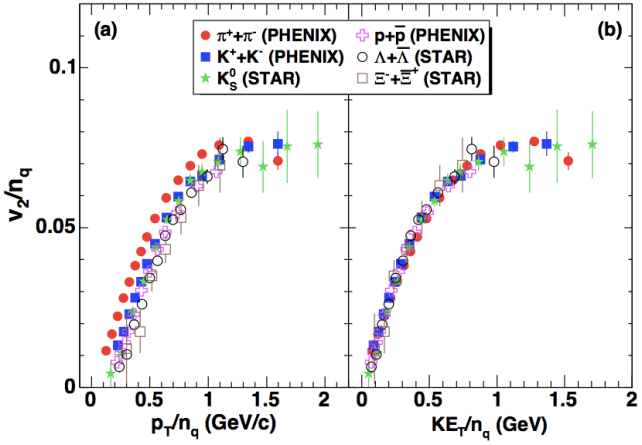


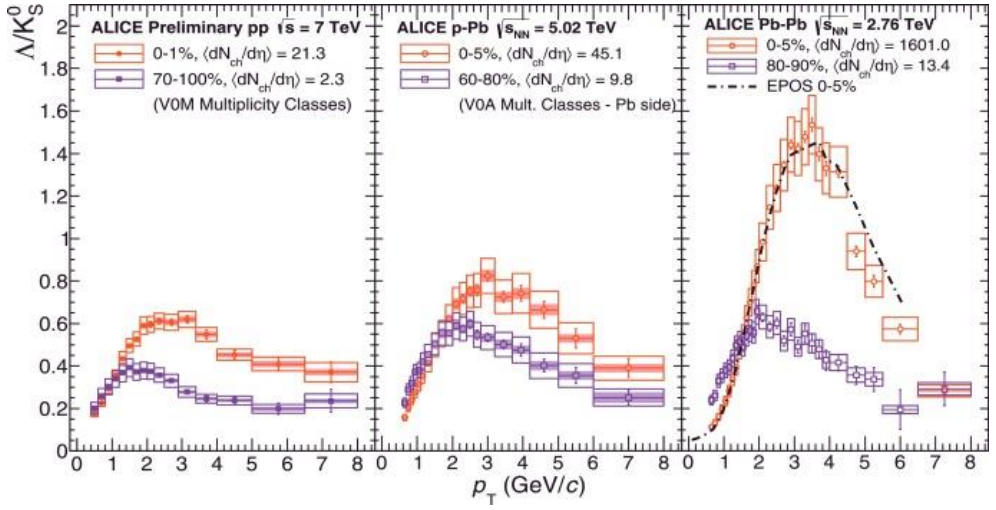
ハドロン化

- Mt-scaling, リコンビネーション、フラグメンテーション



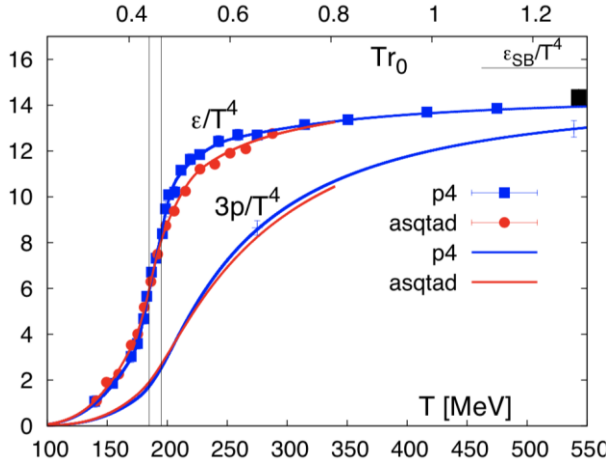


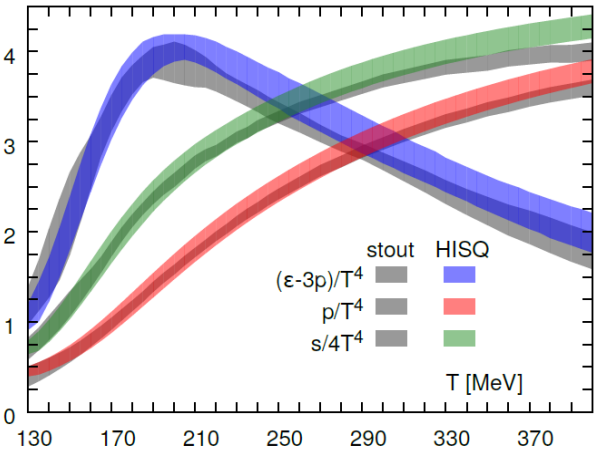


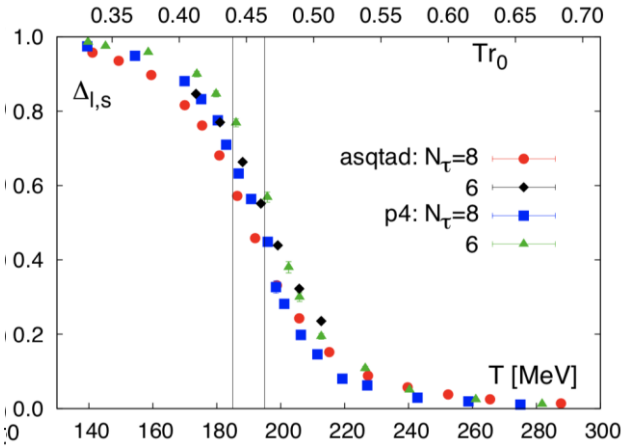


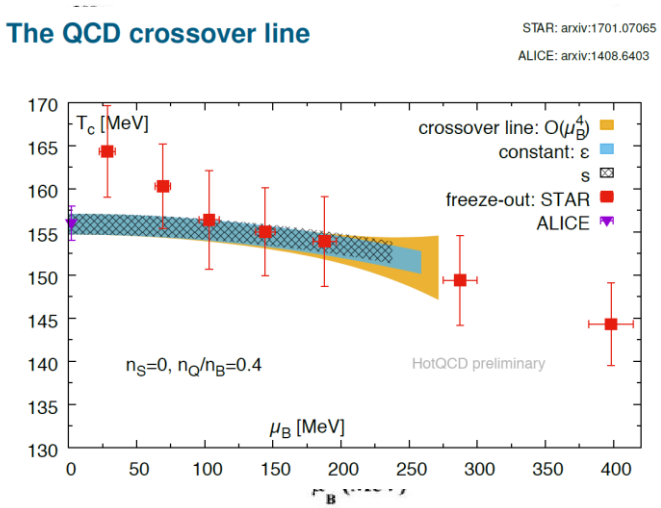
格子ＱＣＤ

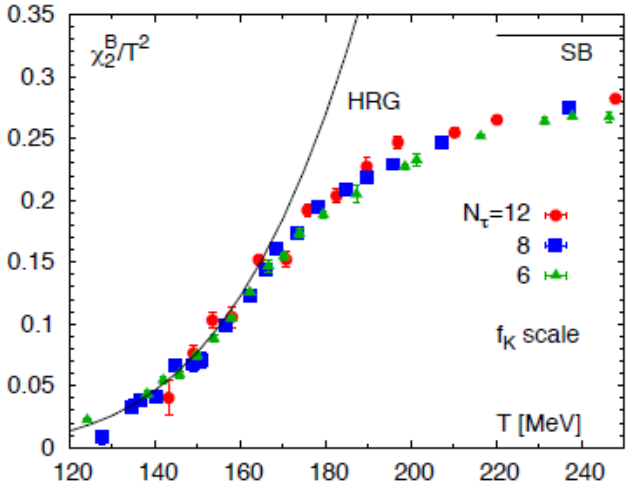
- 状態方程式や秩序変数(振舞の直感的理解)、散逸係数、擬相転移温度、有限密度の困難について

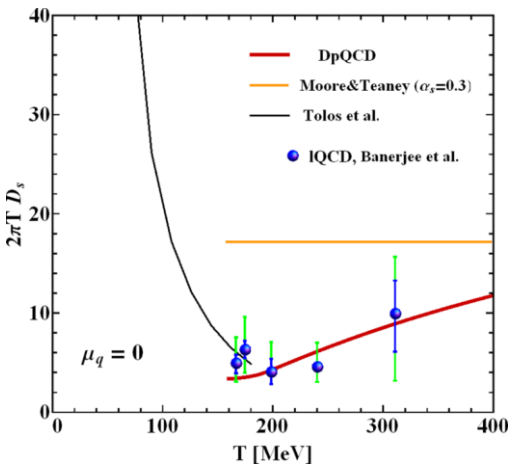






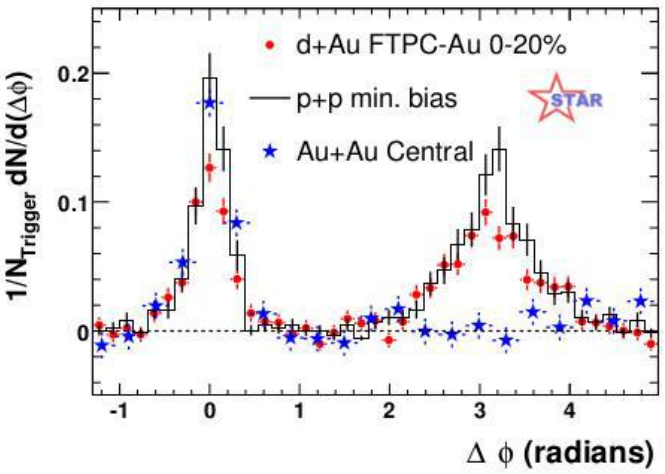


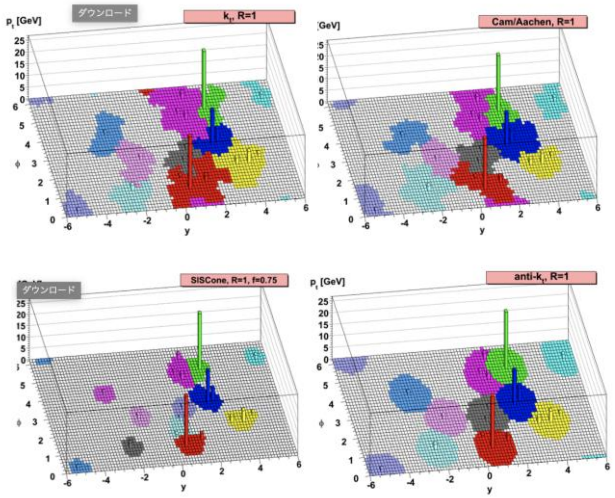


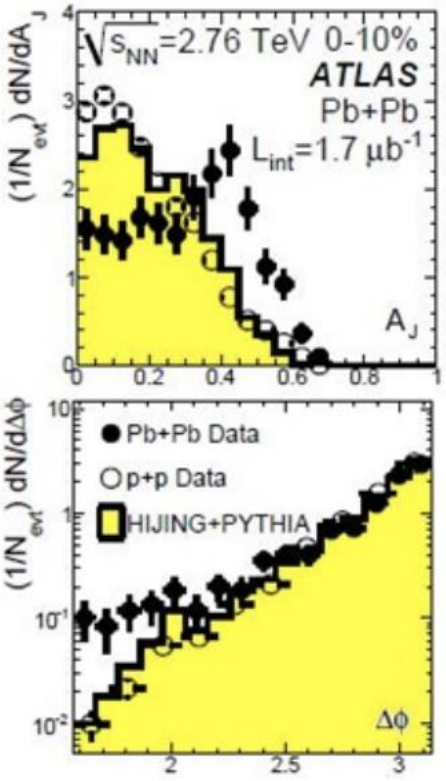


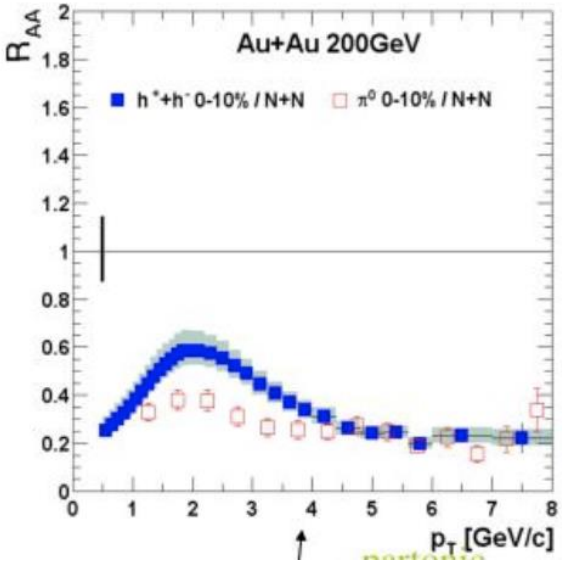
RAAとジェットクエンチング

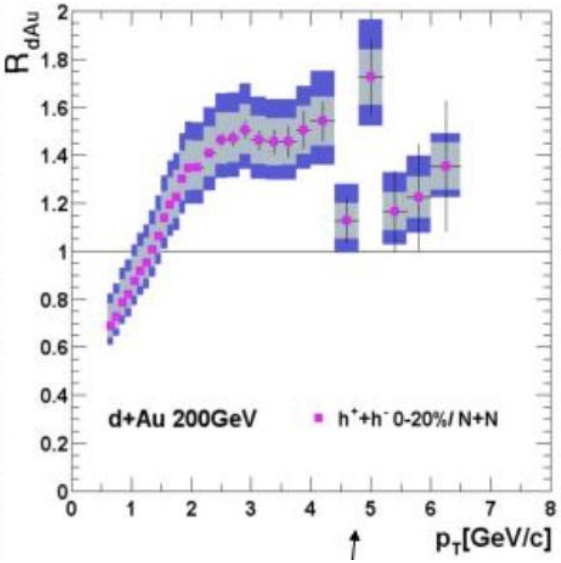
- エネルギーロスとの関係、RAA, δpT,

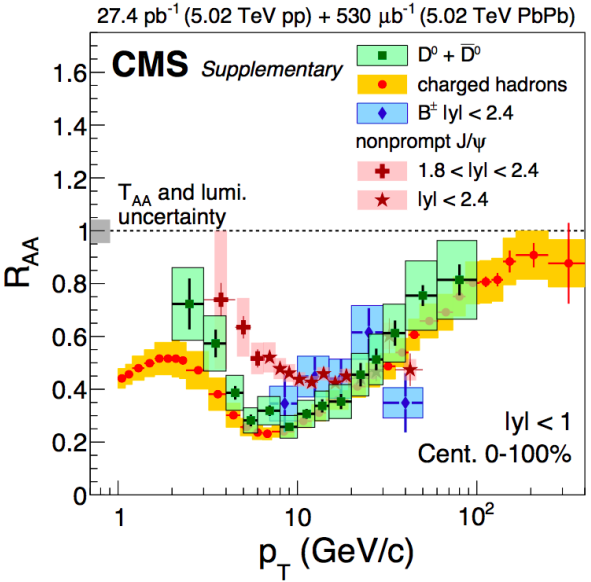






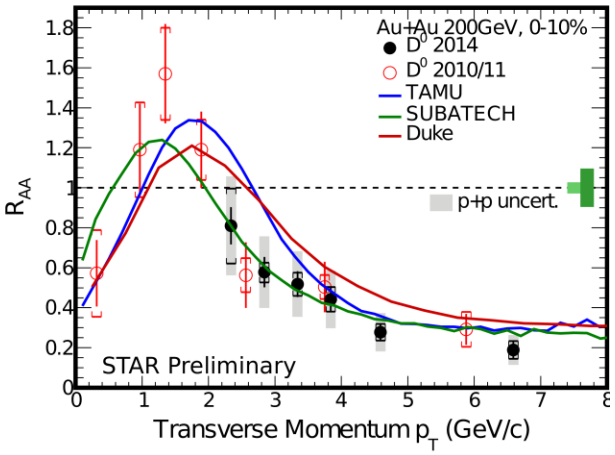


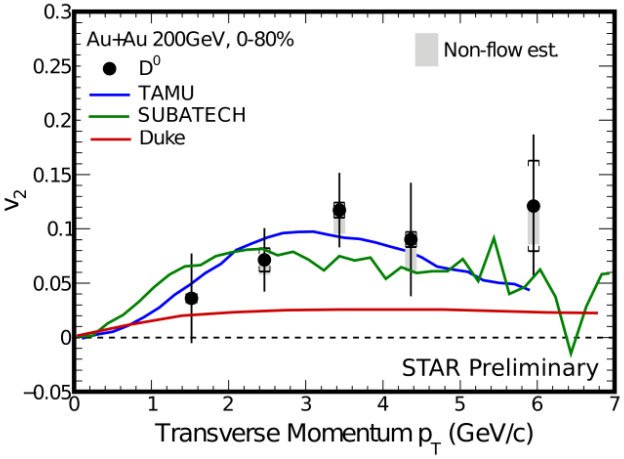


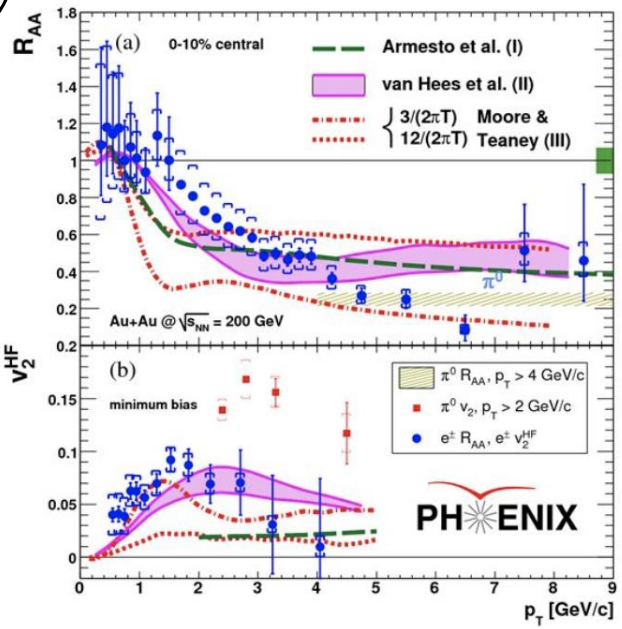


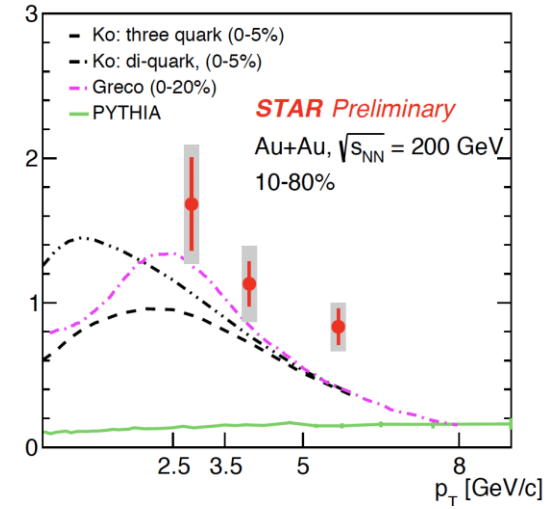
重クォーク

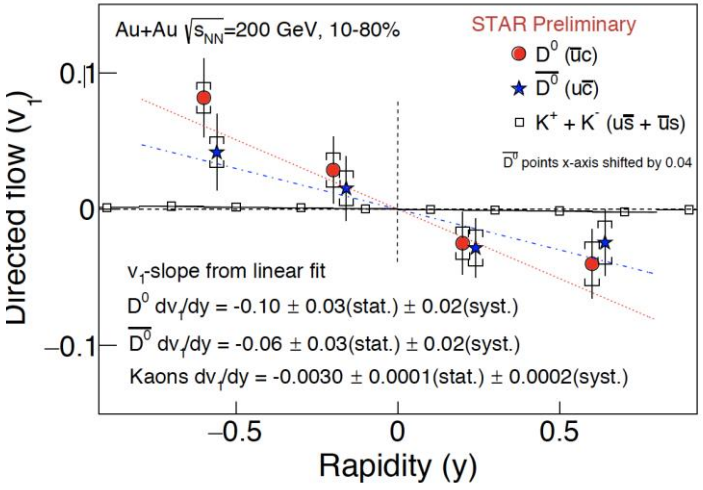
- 衝突エネルギー損失、ジェットクエンチング

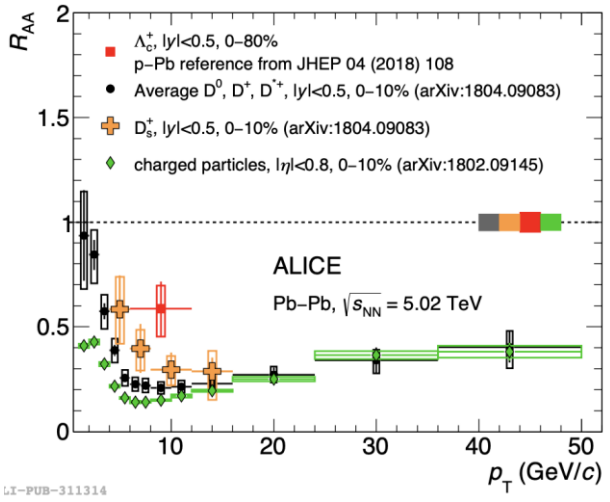






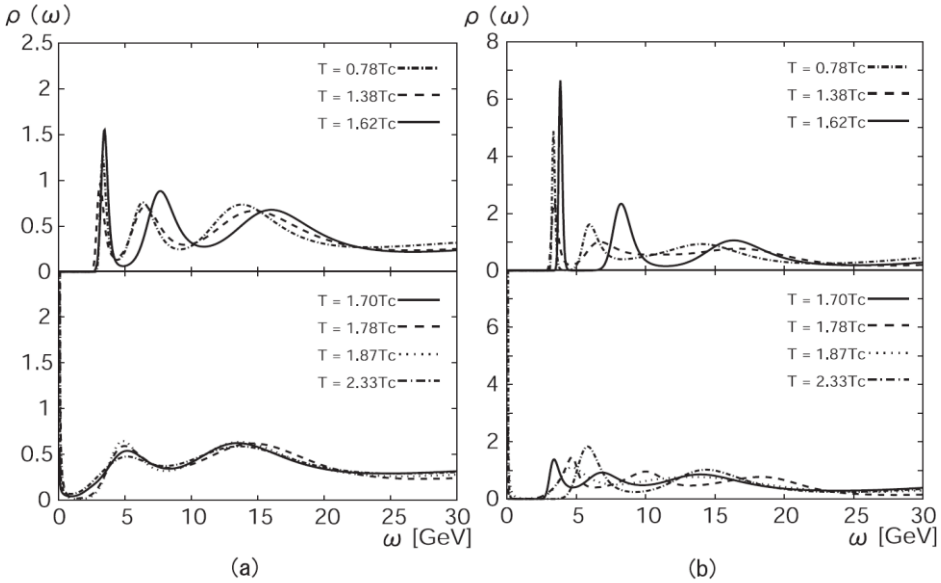


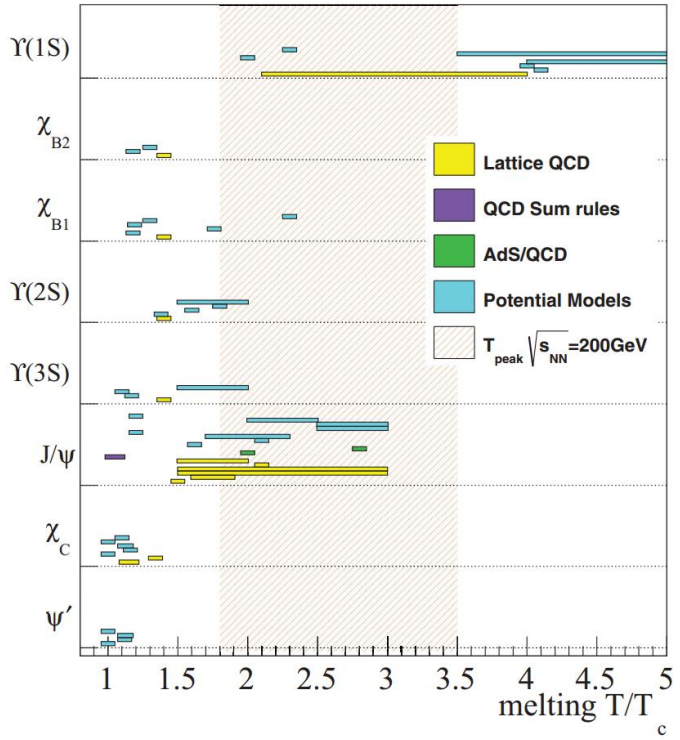


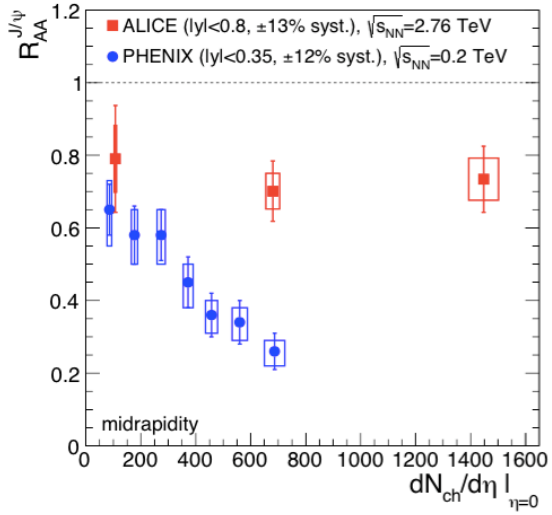


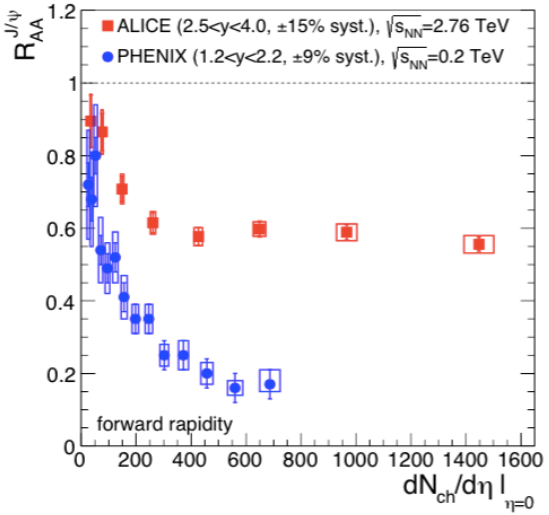
クォーコニウム

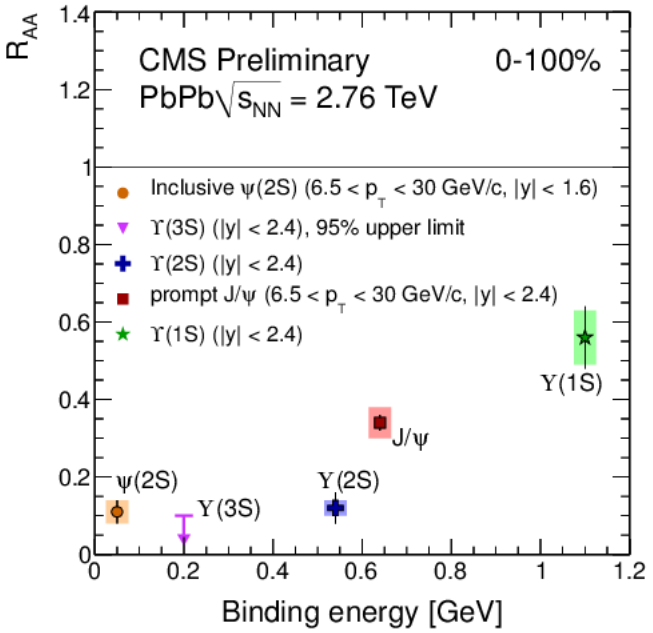
- カラー遮蔽、溶解温度、再結合、UPC





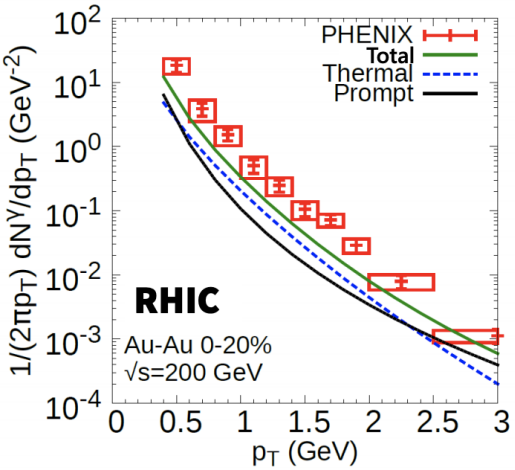


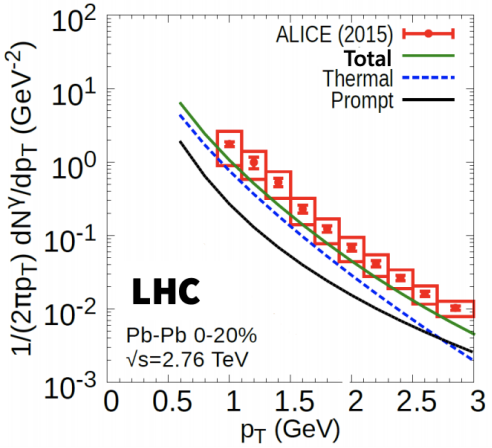


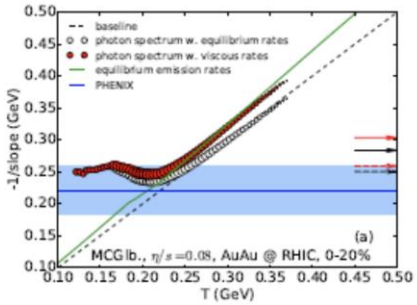


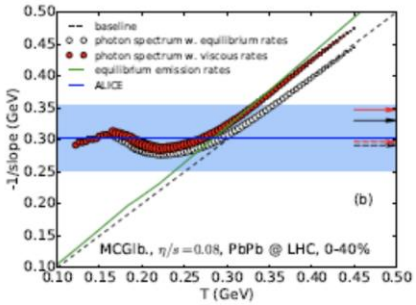
光子

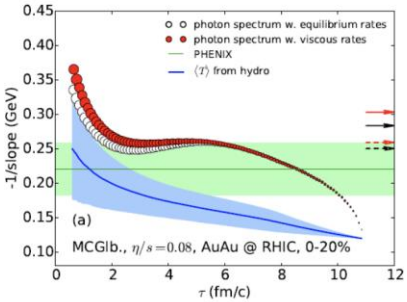
- フォトンパズル

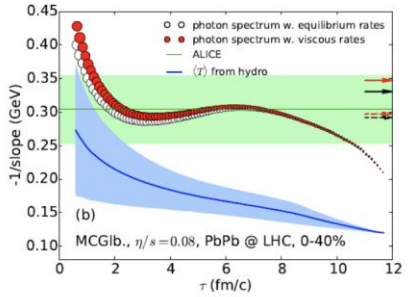

PHENIX
Total
Thermal
Prompt
RHIC
Au-Au 0-20%
√s=200 GeV
1/(2πp_T) dN^γ/dp_T (GeV^-2)
p_T (GeV)

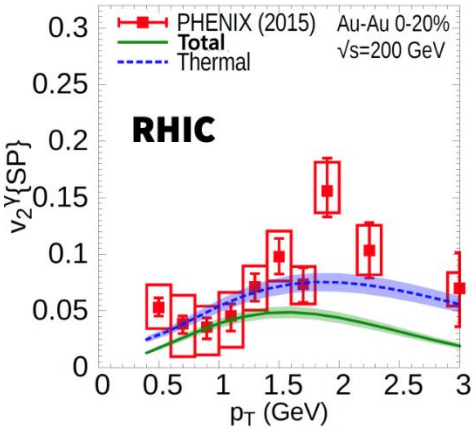

ALICE (2015)
Total
Thermal
Prompt
LHC
Pb-Pb 0-20%
√s=2.76 TeV
1/(2πp_T) dN^γ/dp_T (GeV^-2)
p_T (GeV)

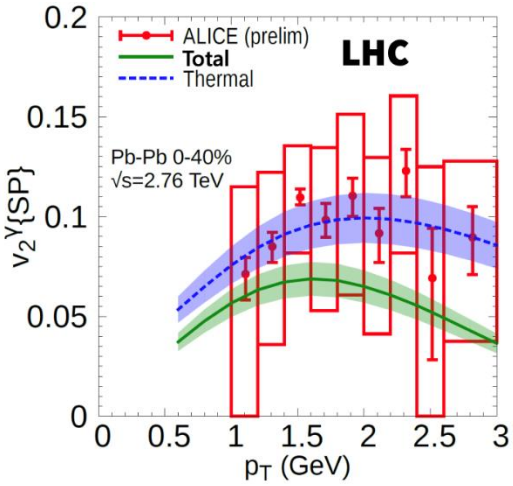

baseline
photon spectrum w. equilibrium rates
photon spectrum w. viscous rates
equilibrium emission rates
PHENIX
-1/slope (GeV)
T (GeV)
(a)
MCGlb., η/s=0.08, AuAu @ RHIC, 0-20%

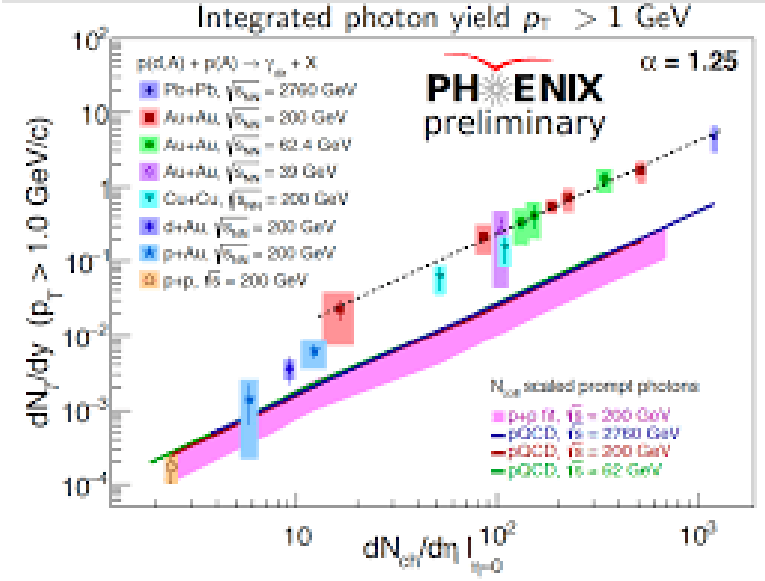

baseline
photon spectrum w. equilibrium rates
photon spectrum w. viscous rates
equilibrium emission rates
ALICE
-1/slope (GeV)
T (GeV)
(b)
MCGlb., η/s=0.08, PbPb @ LHC, 0-40%


photon spectrum w. equilibrium rates
photon spectrum w. viscous rates
PHENIX
⟨τ⟩ from hydro
-1/slope (GeV)
τ (fm/c)
(a)
MCGlb., η/s=0.08, AuAu @ RHIC, 0-20%


photon spectrum w. equilibrium rates
photon spectrum w. viscous rates
ALICE
⟨τ⟩ from hydro
-1/slope (GeV)
τ (fm/c)
(b)
MCGlb., η/s=0.08, PbPb @ LHC, 0-40%


PHENIX (2015)
Total
Thermal
Au-Au 0-20%
√s=200 GeV
RHIC
v_2^γ{SP}
p_T (GeV)


ALICE (prelim)
Total
Thermal
LHC
Pb-Pb 0-40%
√s=2.76 TeV
v_2^γ{SP}
p_T (GeV)


Integrated photon yield p_T > 1 GeV
PHENIX
preliminary
α = 1.25
dN_γ/dy (p_T > 1.0 GeV/c)
dN_ch/dη |_η=0

レプトン

- カイラル対称性、媒質効果、熱的レプトン対