1) Provide Heavy-Flavor Transport Coefficients (mu_B=0)

(a) Current best estimate of Ds(2\piT) as function of T over available T-range (both charm and bottom, if available).
(b) Normalized momentum dependence of friction coefficient, A(p;T)/A(p=0;T), for current best estimate.
(c) Table of current best estimates of charm friction and momentum-diffusion coefficients for p=0-40GeV (in steps of dp=0.2GeV) and T=0.16-0.6GeV (steps dT=0.02GeV) for mu_B=0. The idea is to run them through a Langevin simulation in a common hydrodynamic medium evolution.

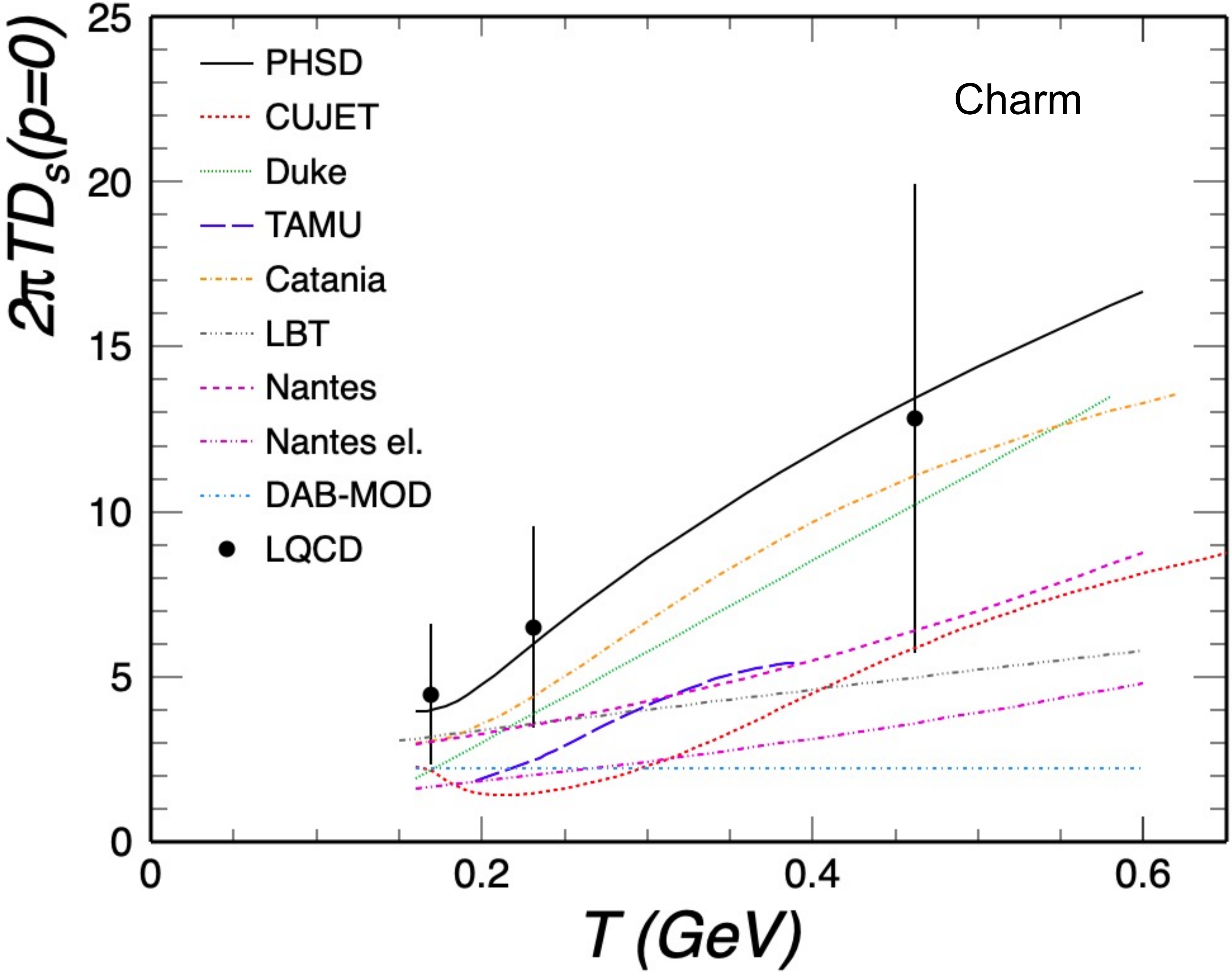
2) Assess Hadronization and Hadronic Phase (test case: 30-50% 5TeV PbPb collisions)

(a) Compute H_AA(pT;T_H) = R_AA^H_Q (pT;T_H) / R_AA^Q(pT;T_H) , the ratio of the R_AA of the heavy meson (H_Q) just after hadronization to the R_AA of the heavy quark (Q) just before hadronization, for H_Q=D,Lambda_c (as available) and Q=c.
(b) The same as (a) but for the elliptic flow, v2: H_v2(pT;T_H) = v2^H_Q (pT;T_H) / v2^Q(pT;T_H).
(c) Compute H_AA and H_v2 ratios for D-meson spectra at kinetic freezeout over those right after hadronization (if applicable).

3) Transport Simulations with Imposed Coefficients

(a) Renormalize the charm-quark transport coefficients with a temperature-dependent but momentum-independent K factor, K(T), as to obtain a temperature-independent value of D_s (2piT) == 4 (for Langevin approaches, D_s = T / [m_Q A(p=0)]); then compute R_AA and v2 of charm quarks right before hadronization for 30-50% 5TeV PbPb collisions within your model.
(b) As an optional assignment (time permitting), to compare transport coefficients from different models: Renormalize current charm-quark transport coefficient, A(p;T), qhat/T^3 for a common R_AA in a fixed brick problem (as in Fig. 7 in Phys. Rev. C99 (2019) 054907); then compute R_AA and v2 of charm quarks right before hadronization for 30-50% 5TeV PbPb collisions within your model.

Q1(a) Current best estimate of Ds(2\piT) as function of T over available T-range (both charm and bottom, if available)



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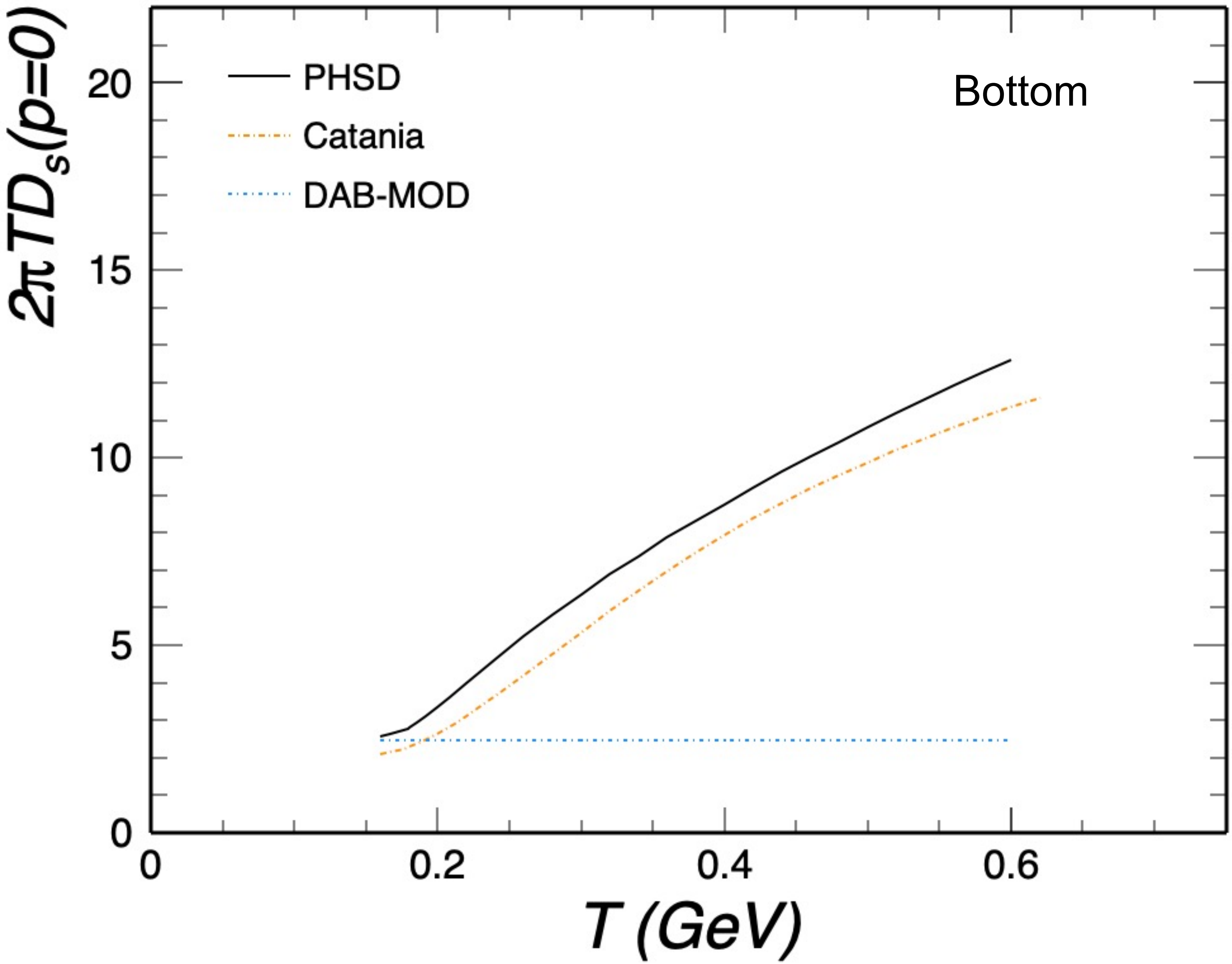
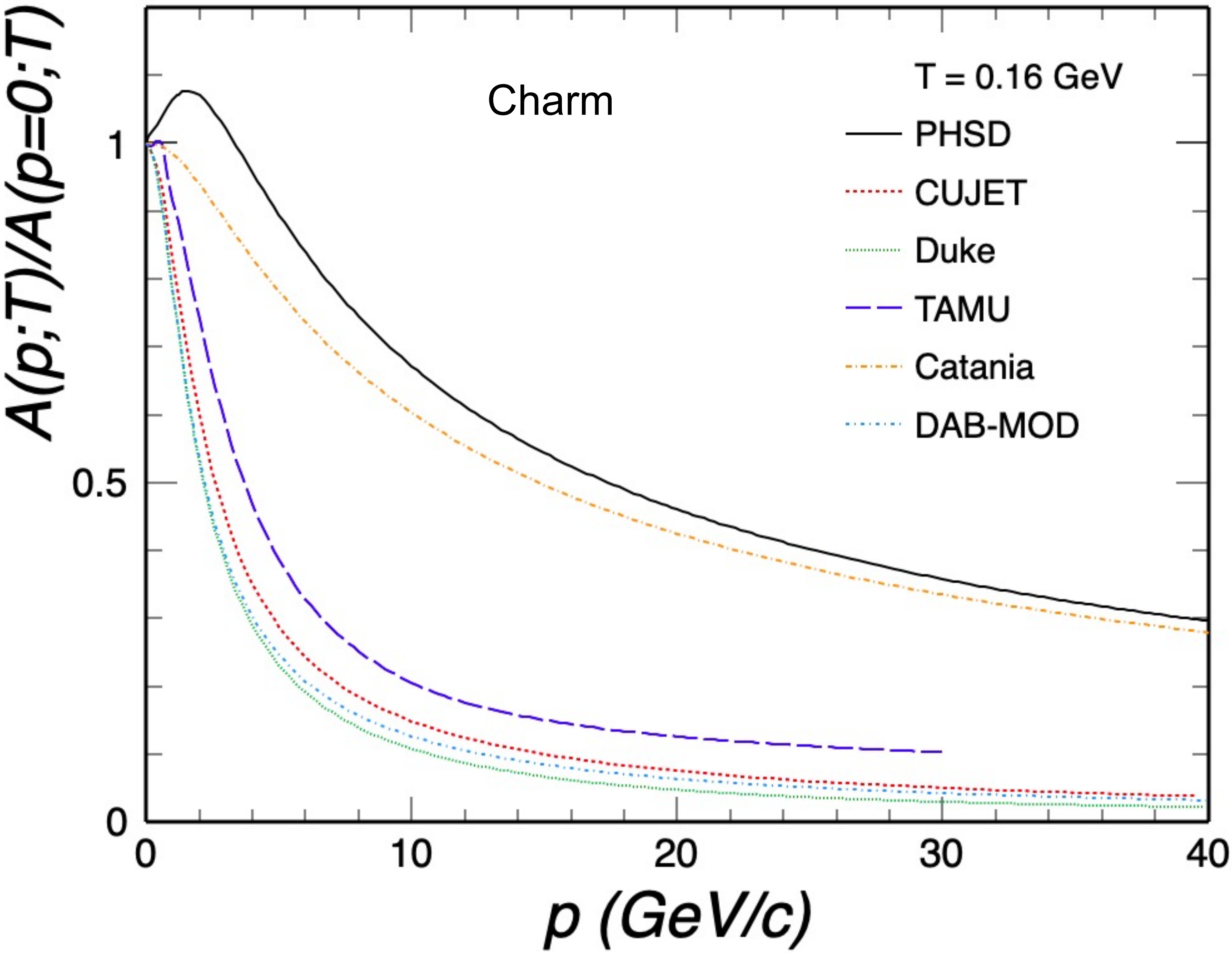


Q1(b) Normalized momentum dependence of friction coefficient, A(p;T)/A(p=0;T), for current best estimate



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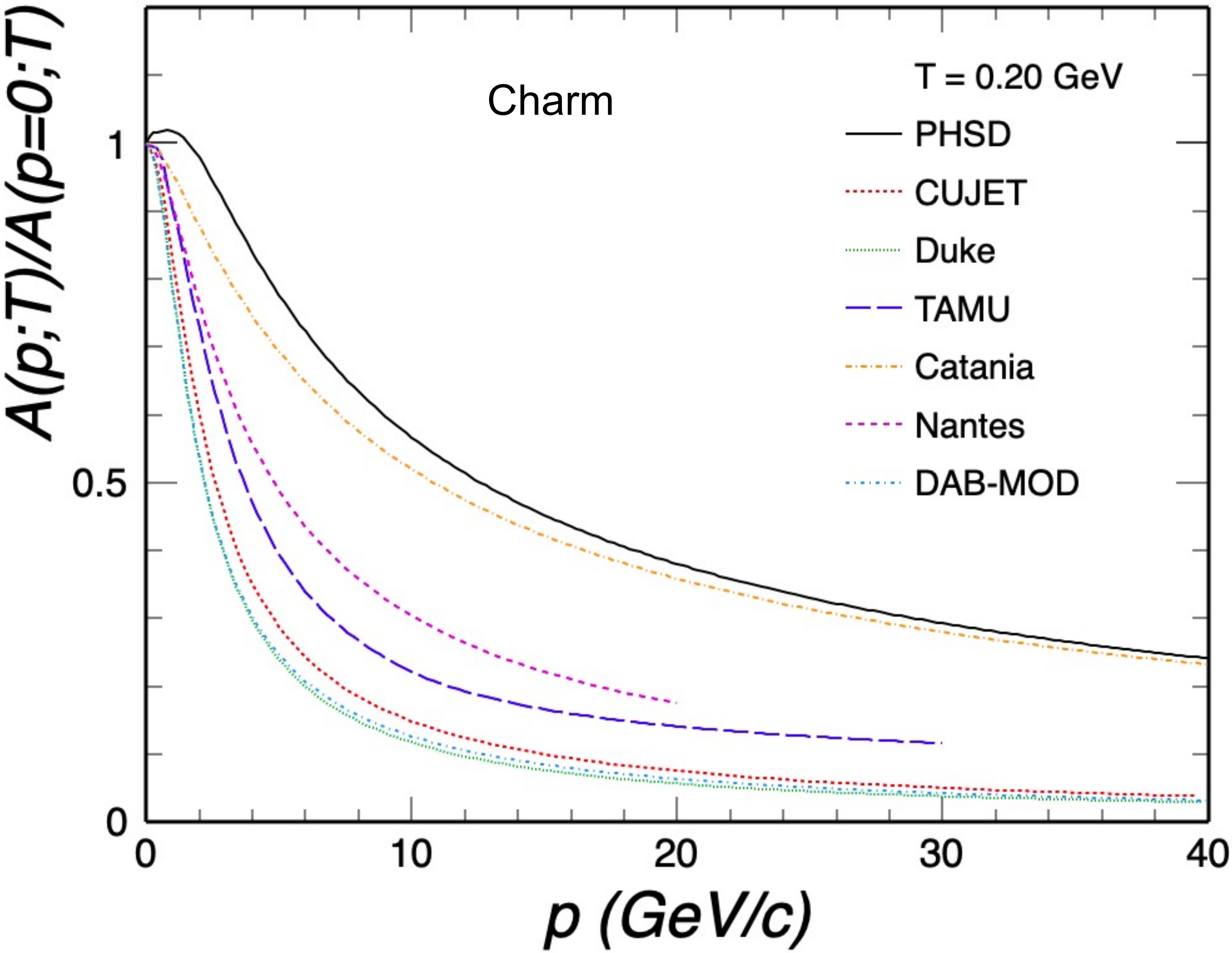

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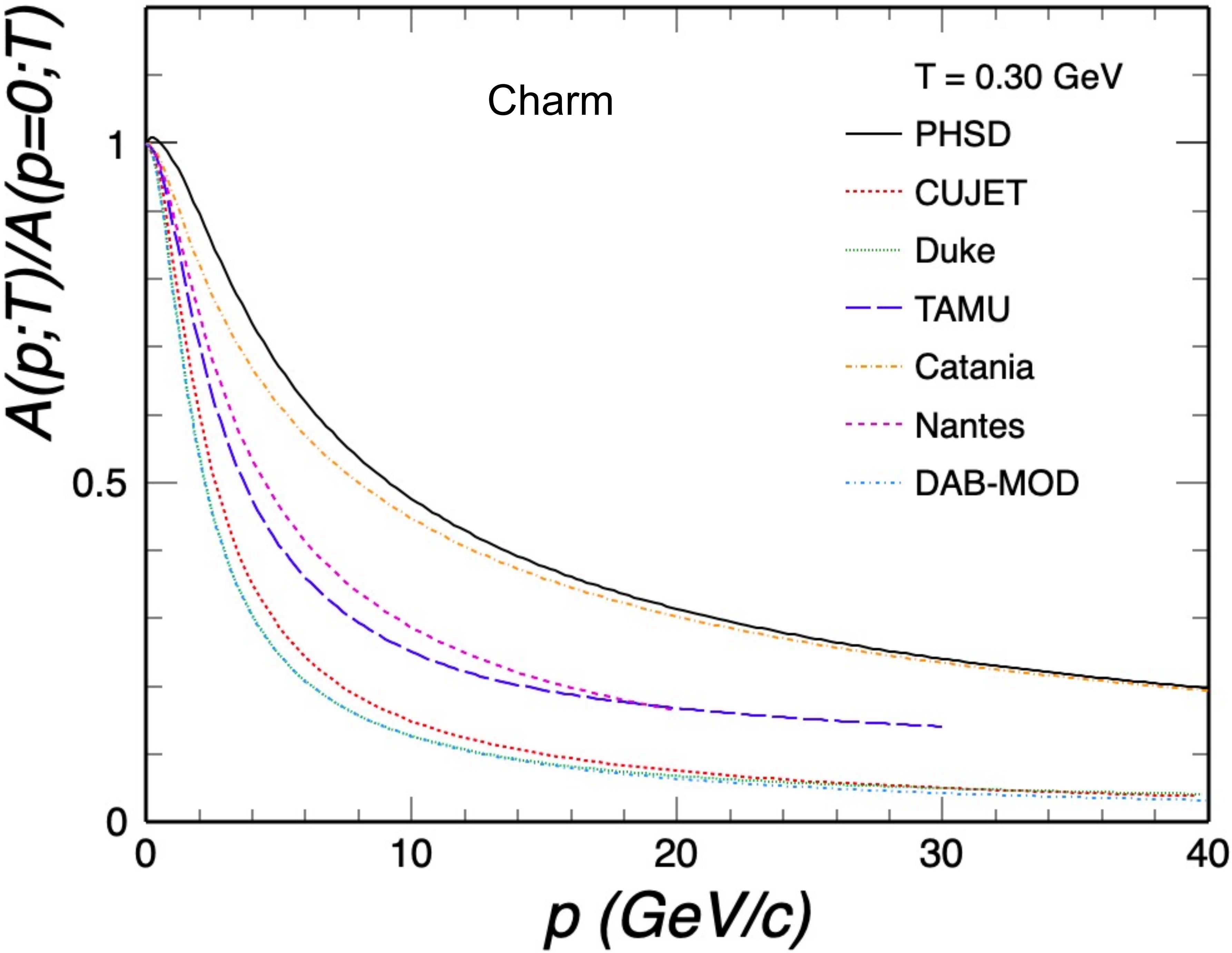

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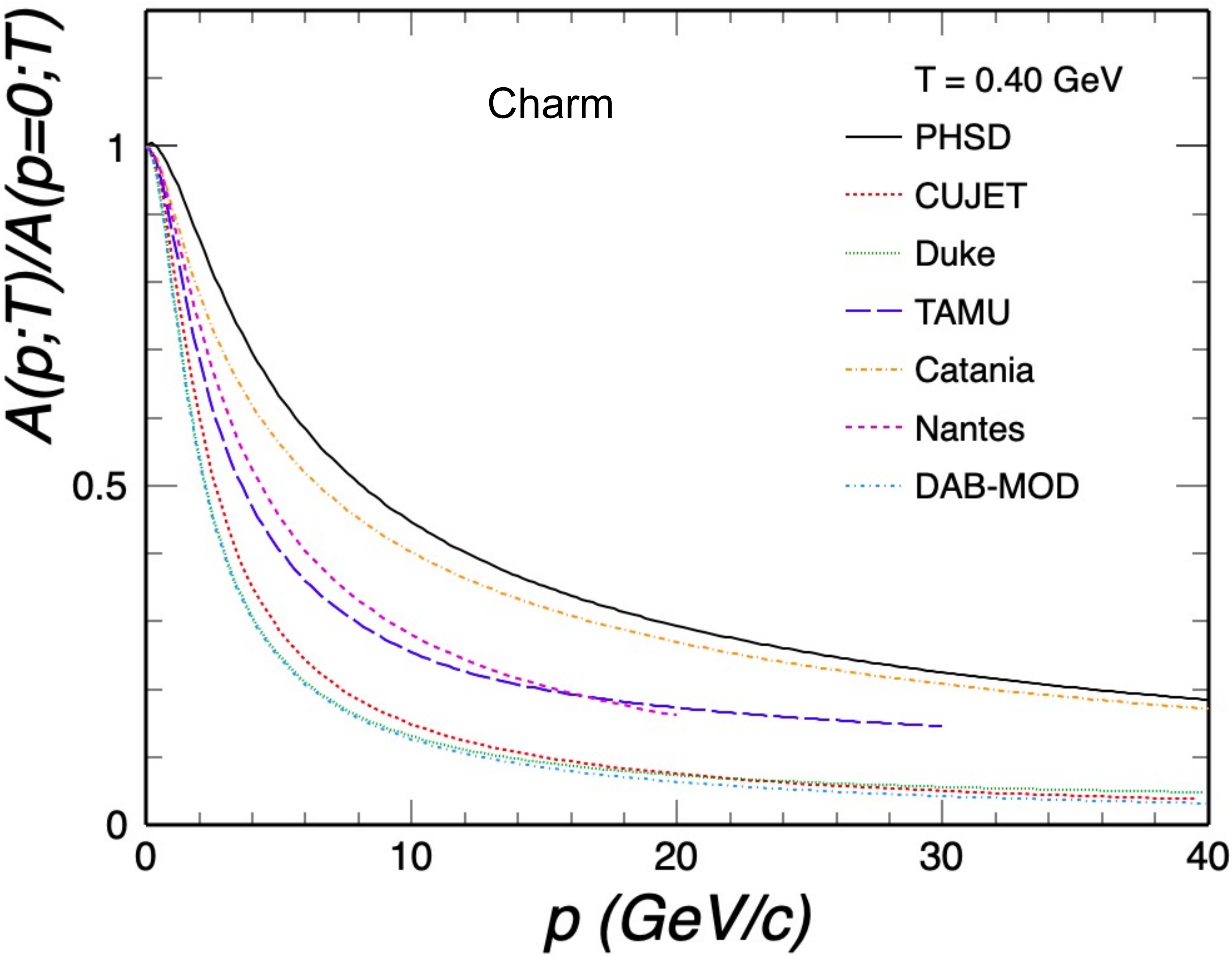

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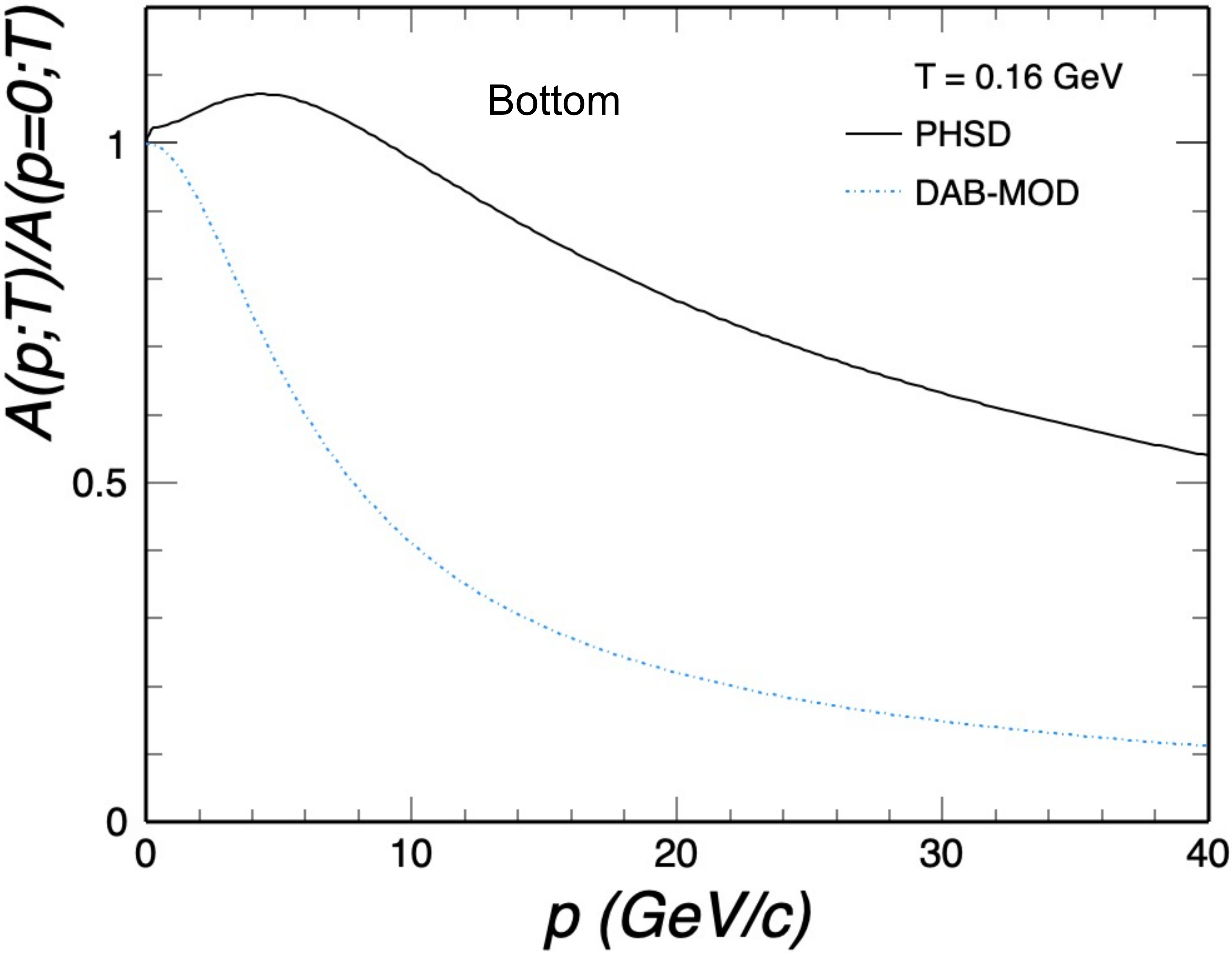

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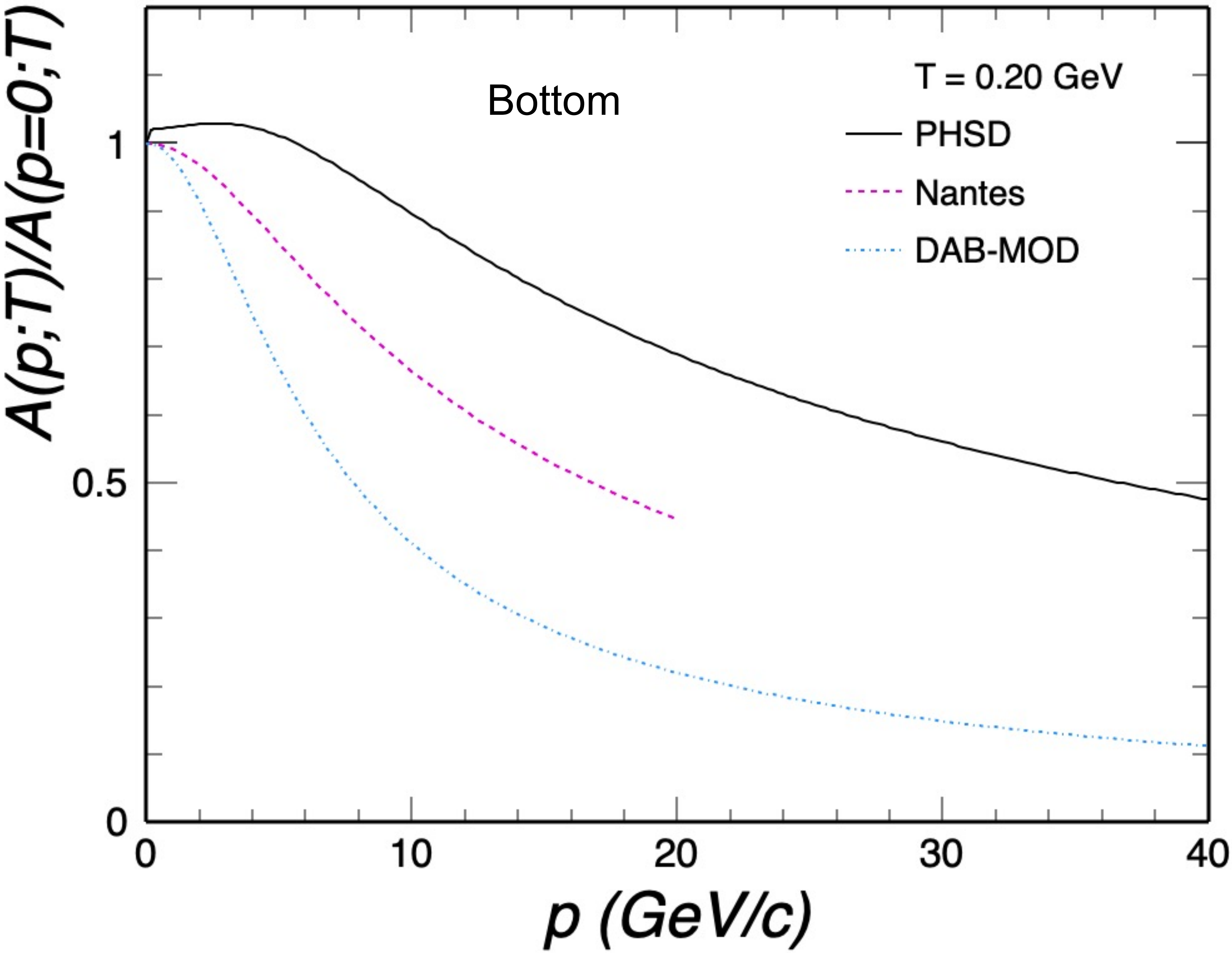

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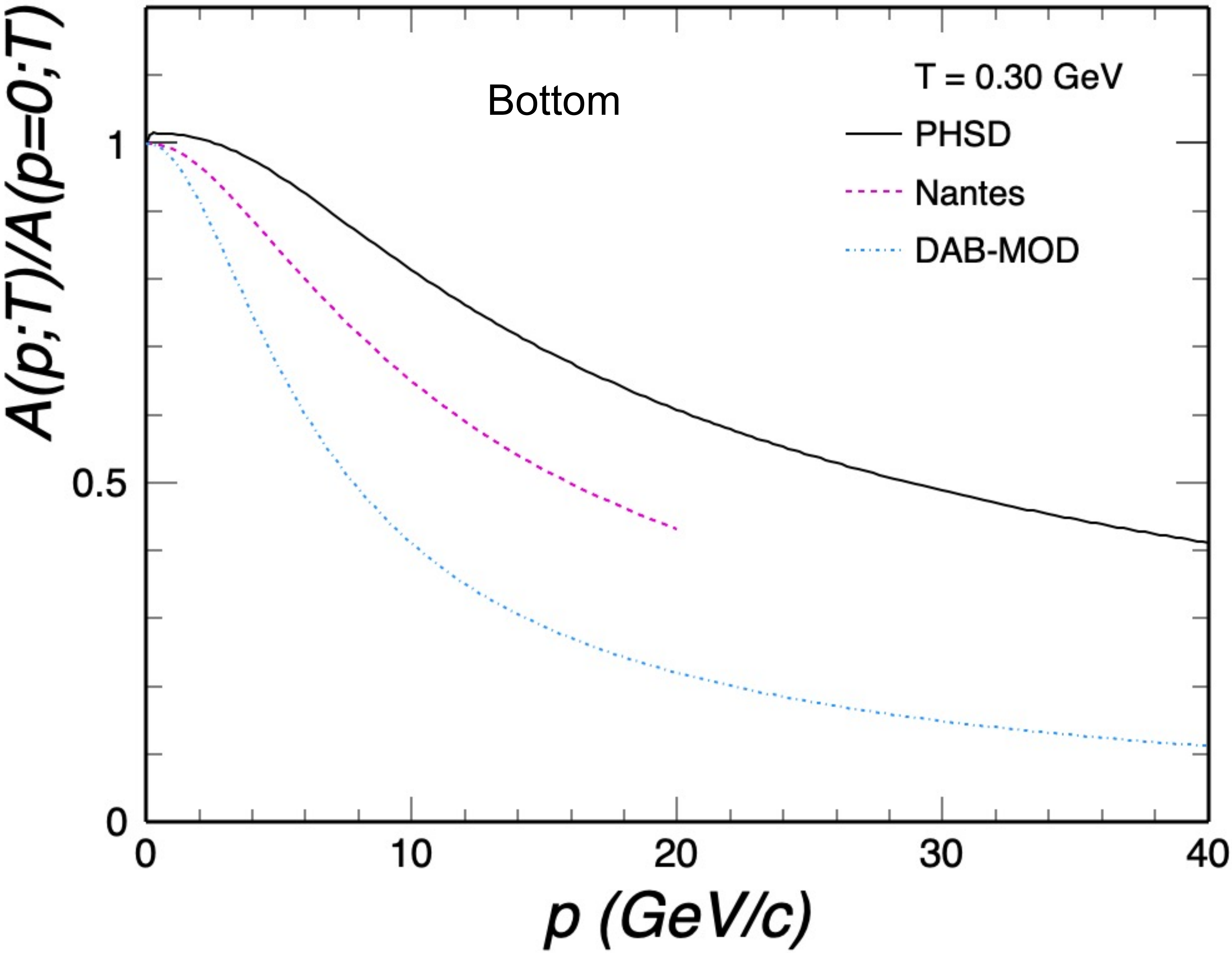

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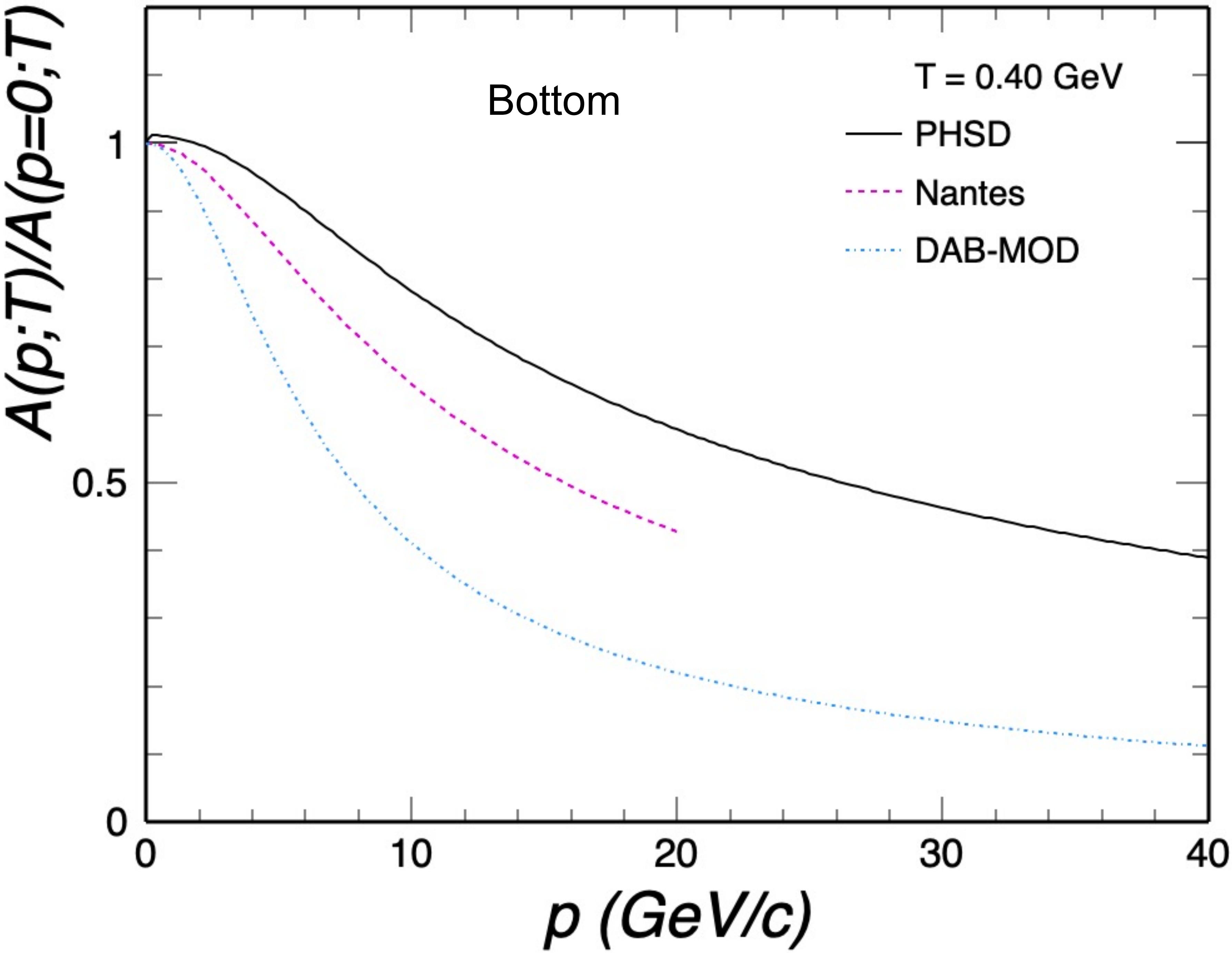
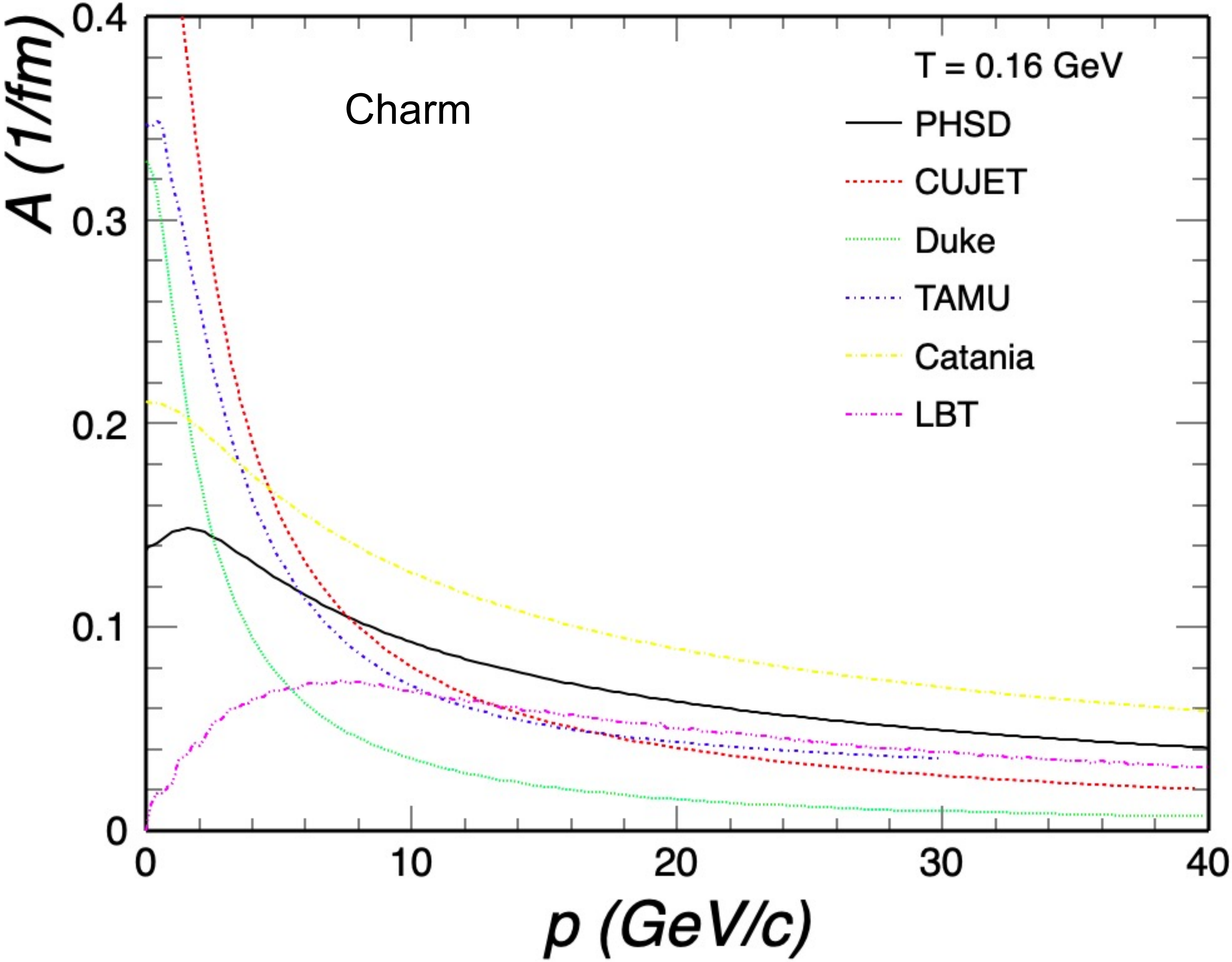


Q1(c) Table of current best estimates of charm friction and momentum-diffusion coefficients for p=0-40GeV and T=0.16-0.6GeV for mu_B=0.



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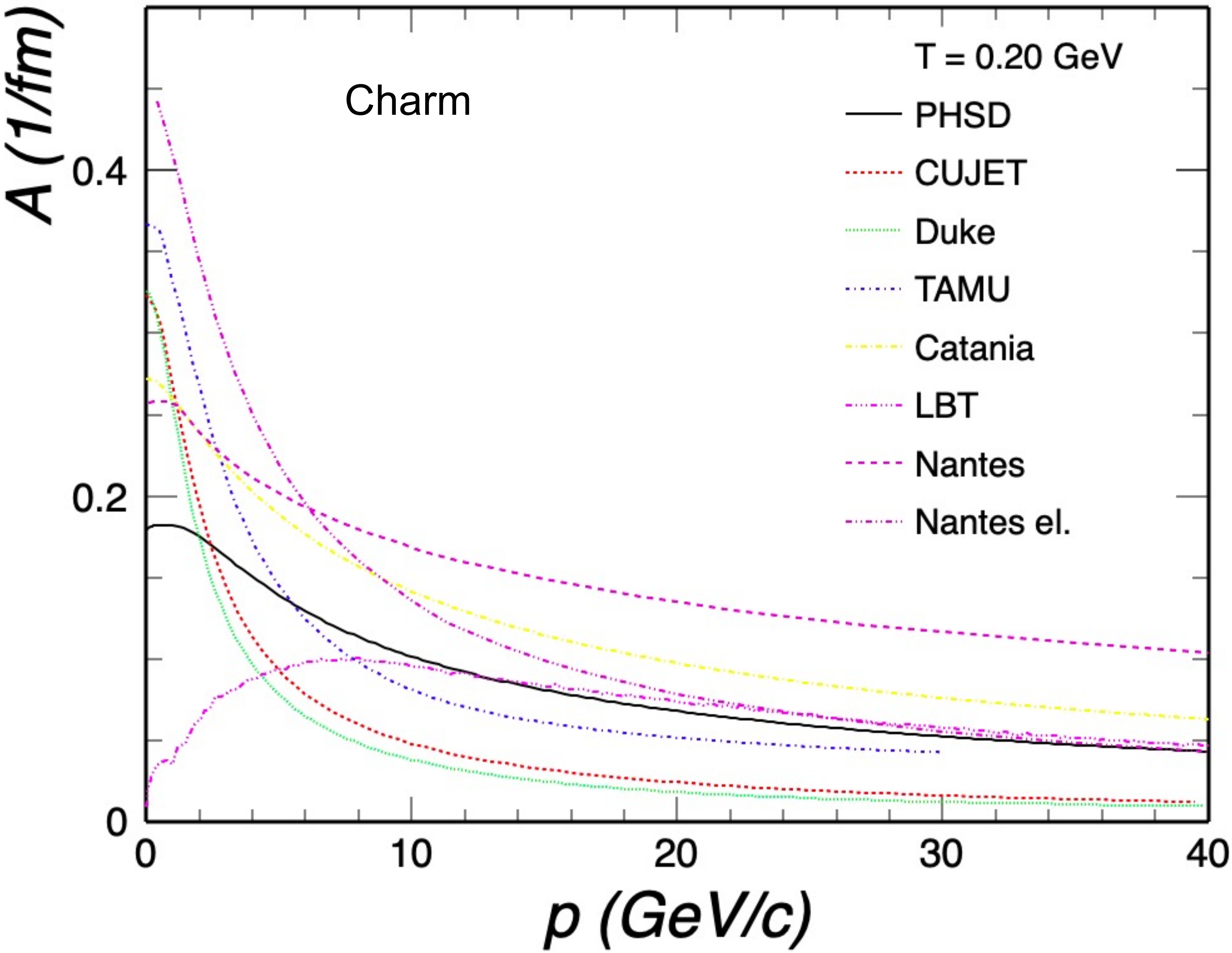

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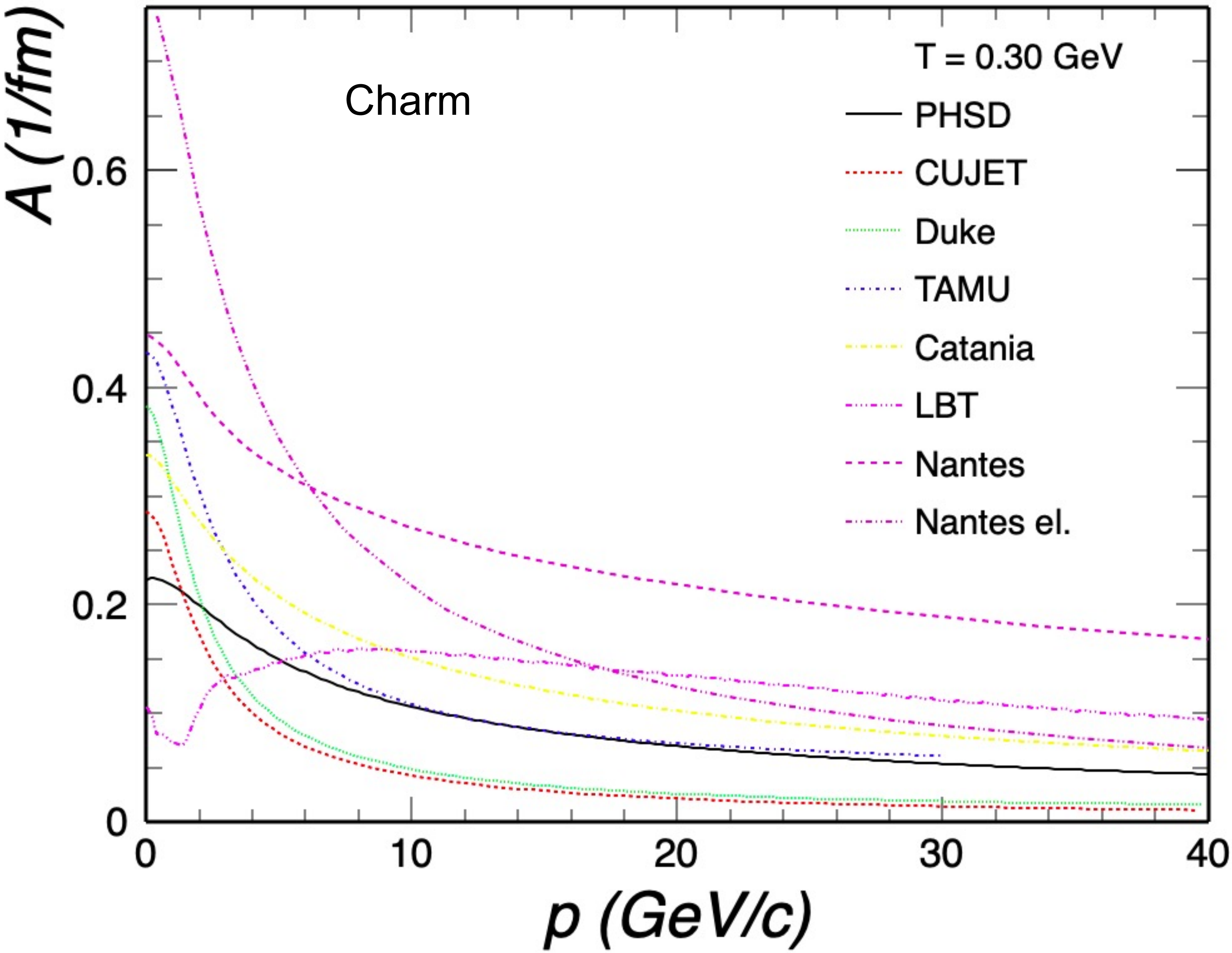

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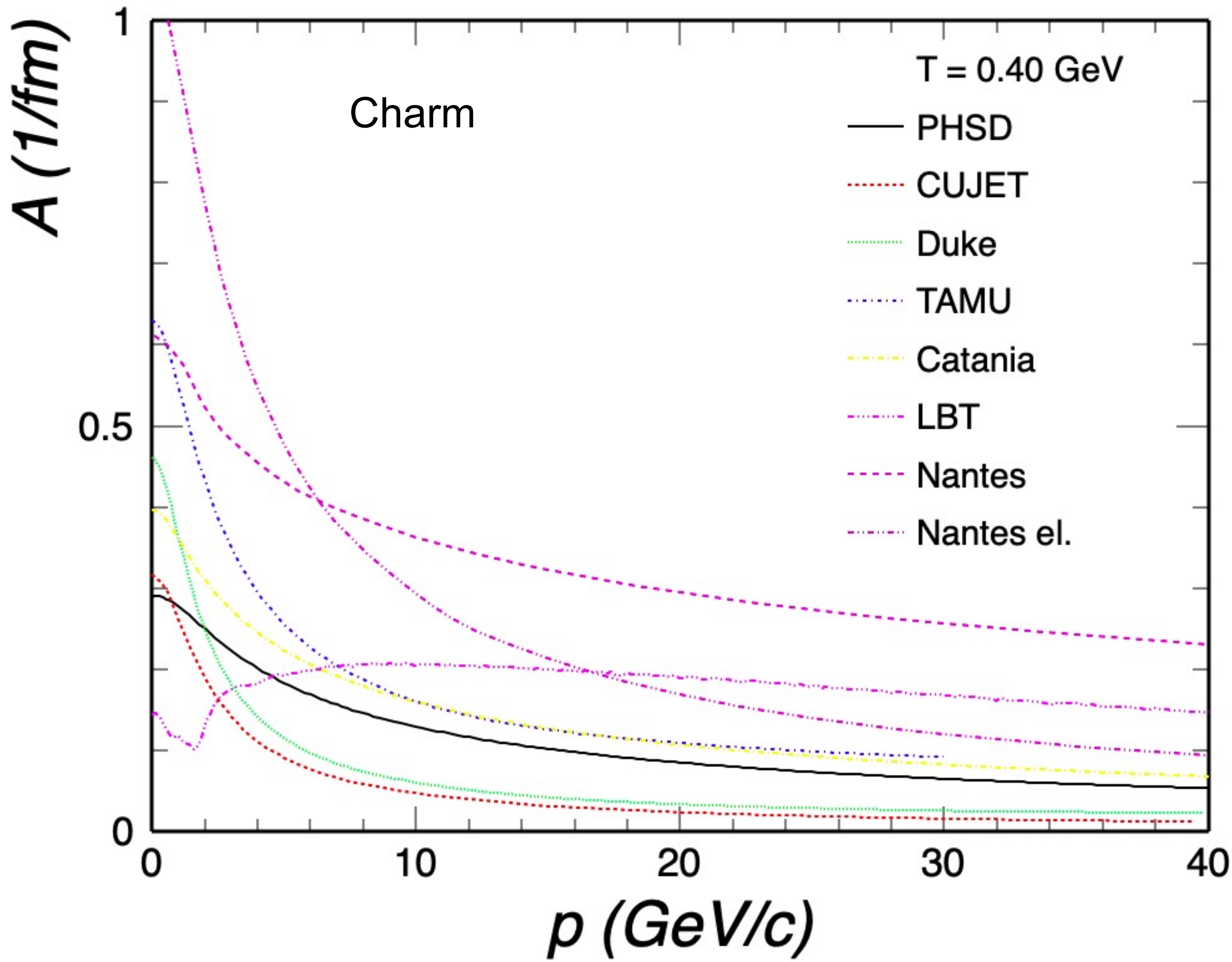

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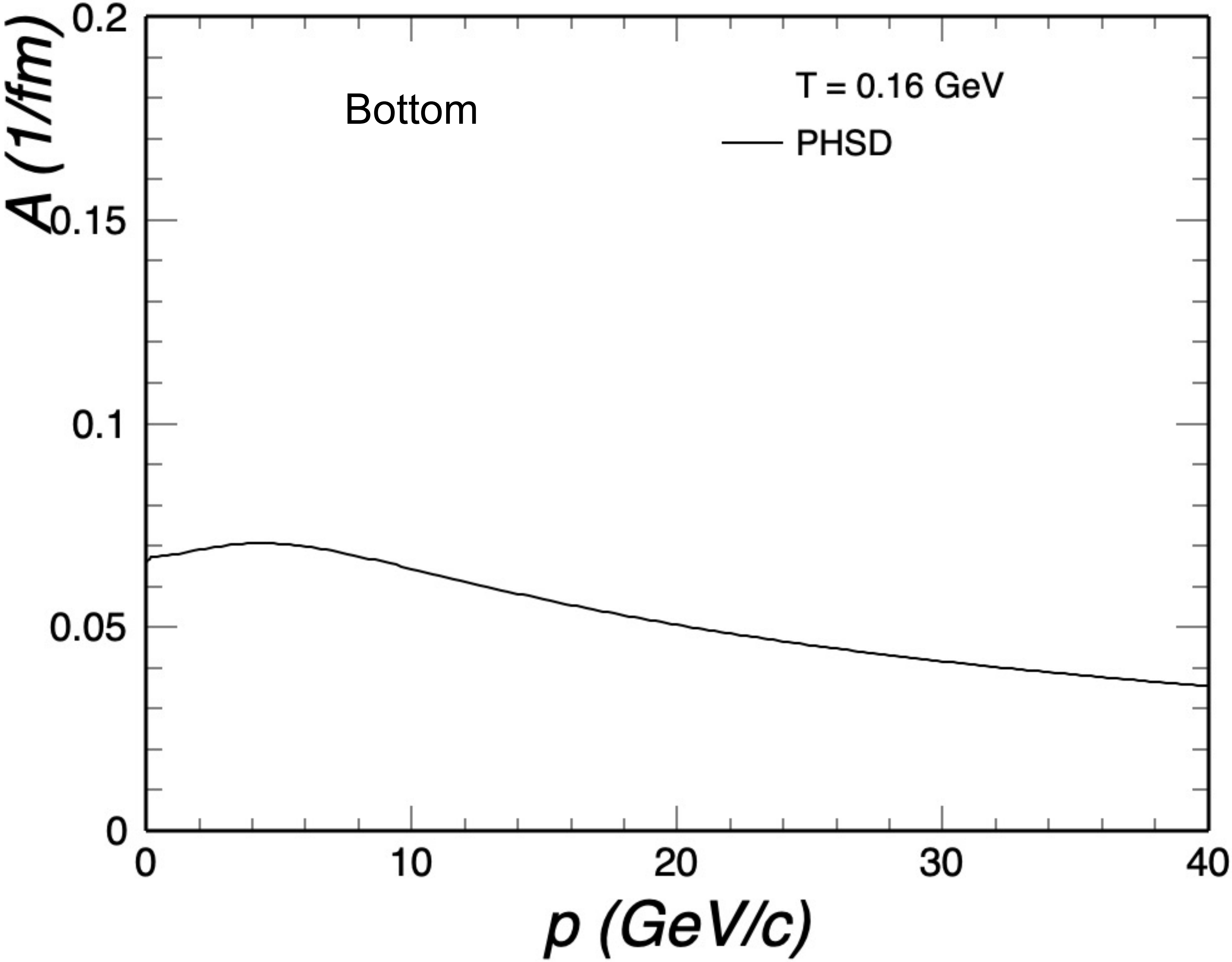

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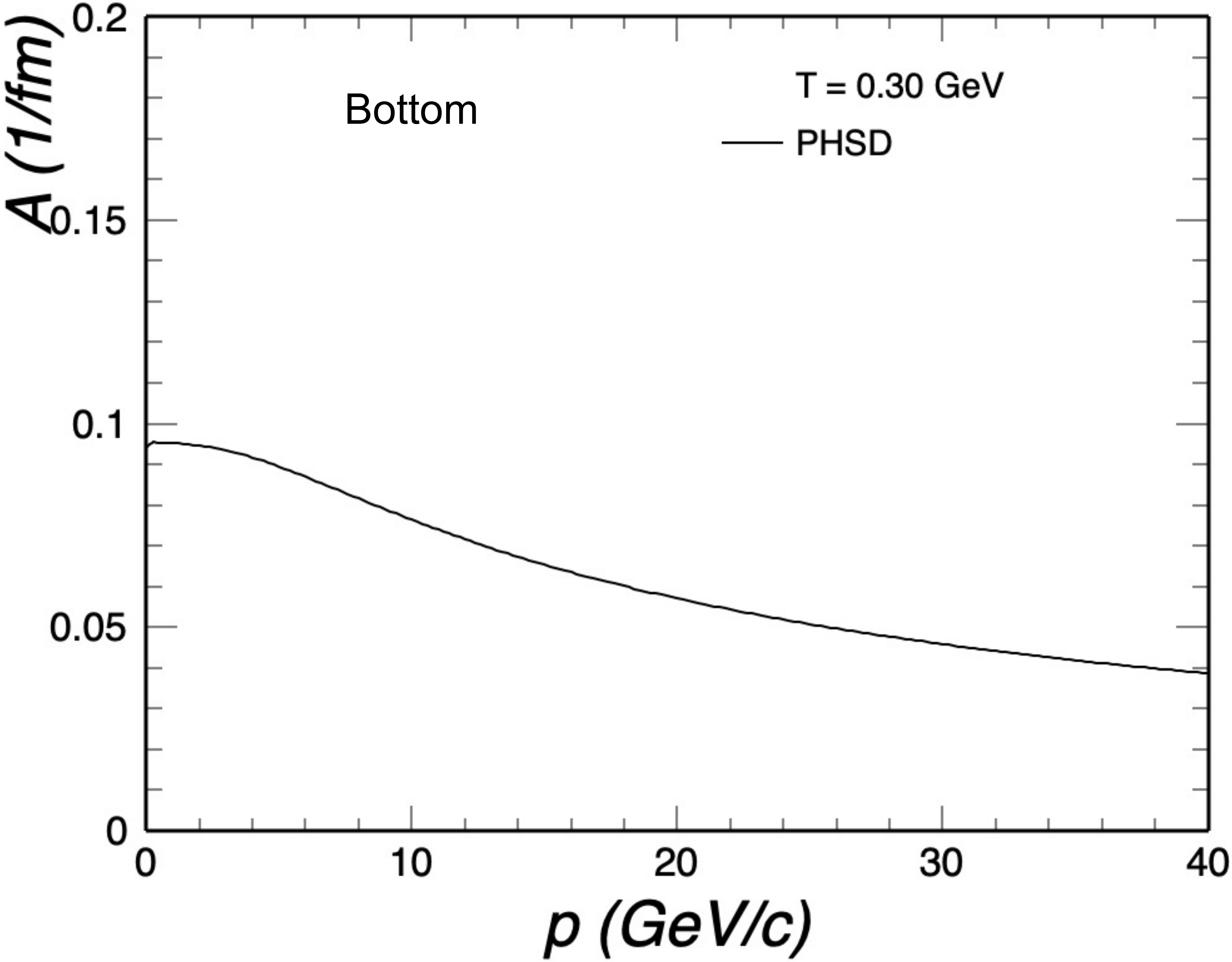

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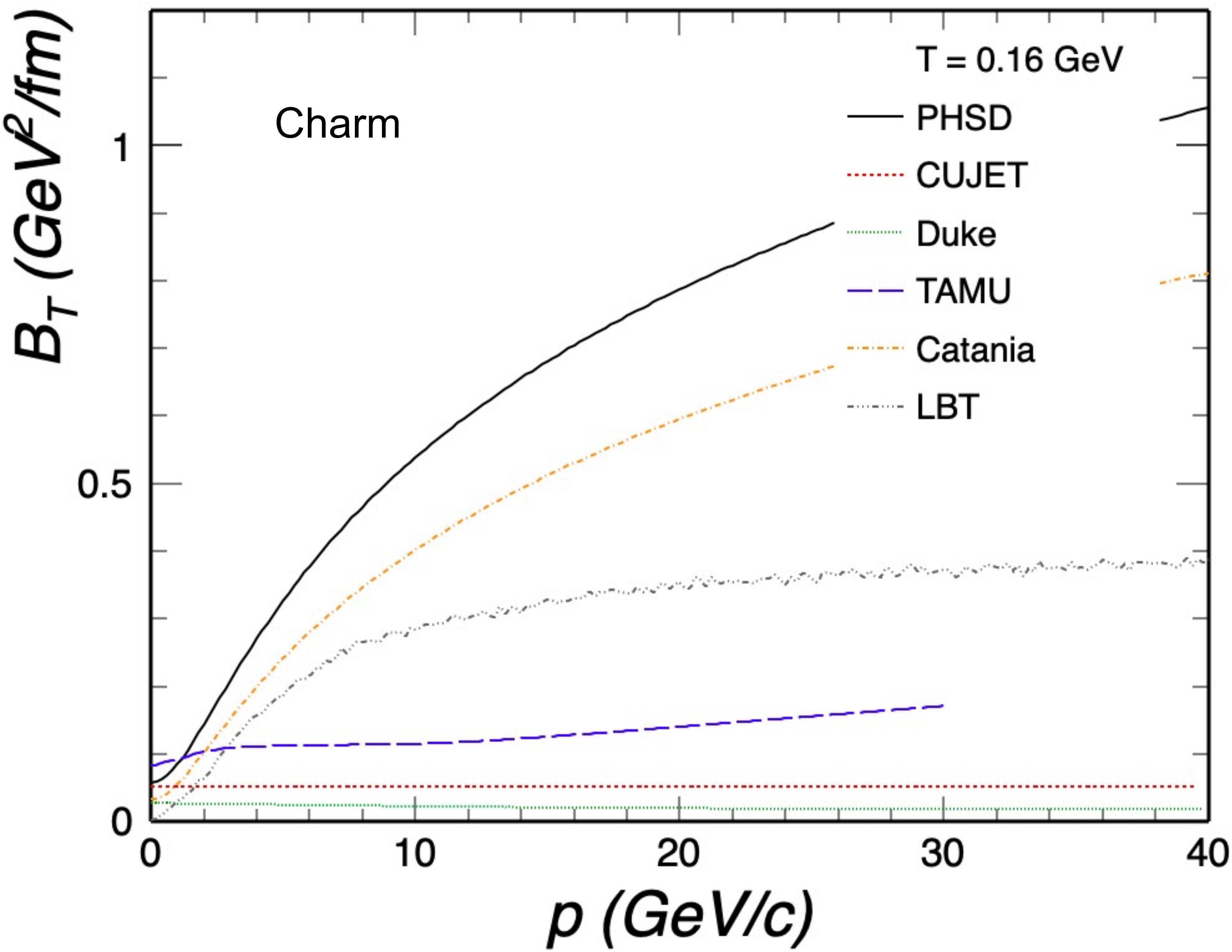

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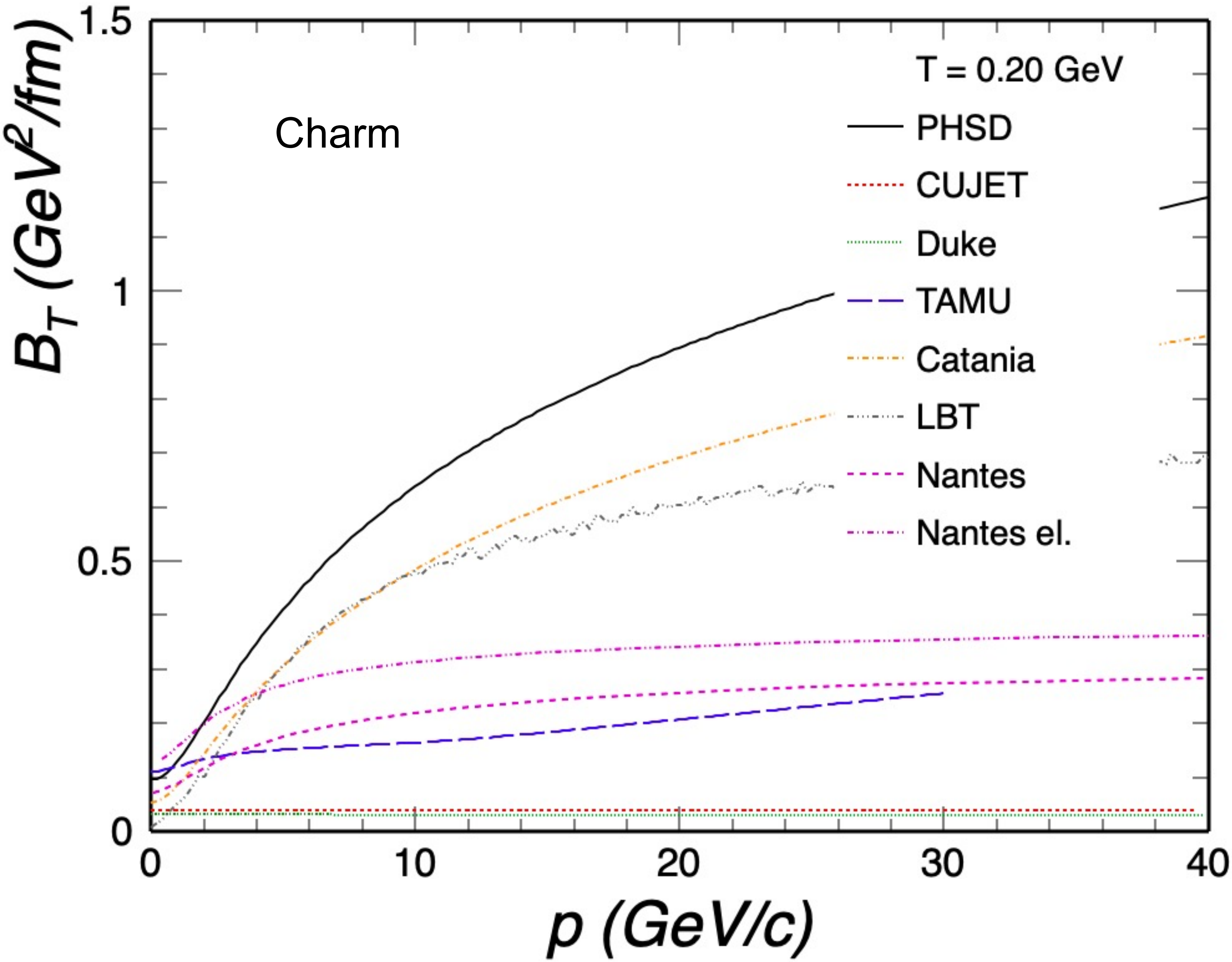

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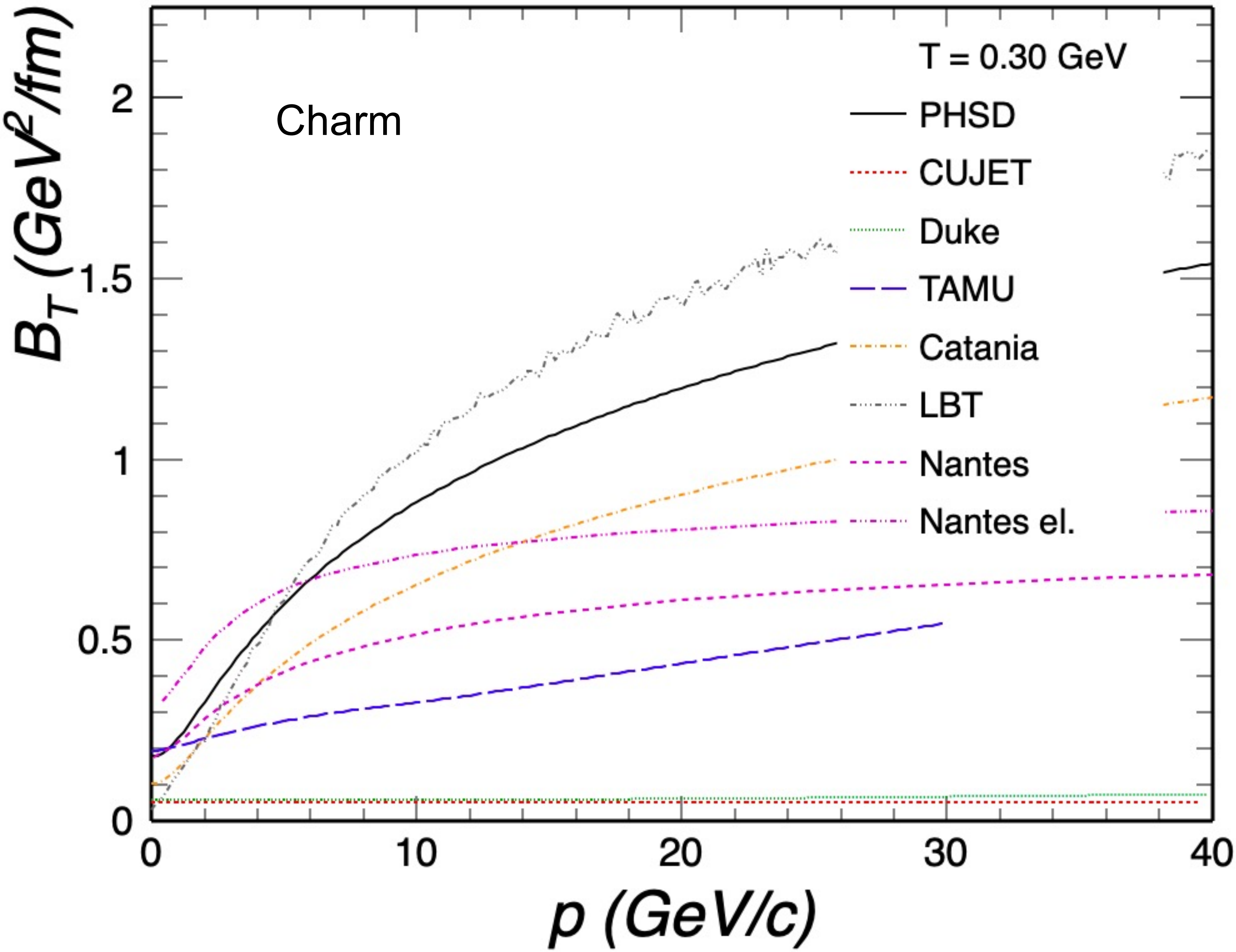

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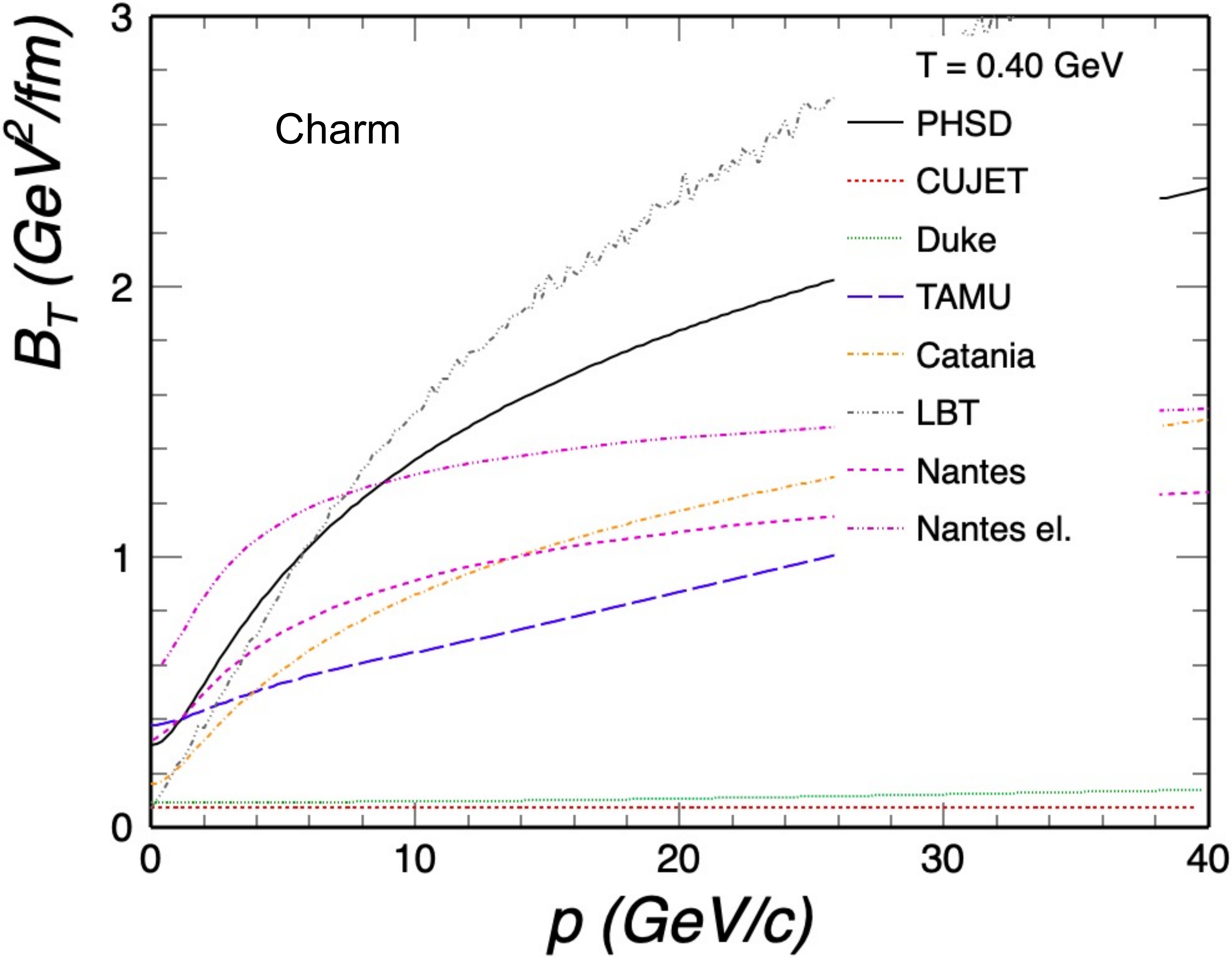

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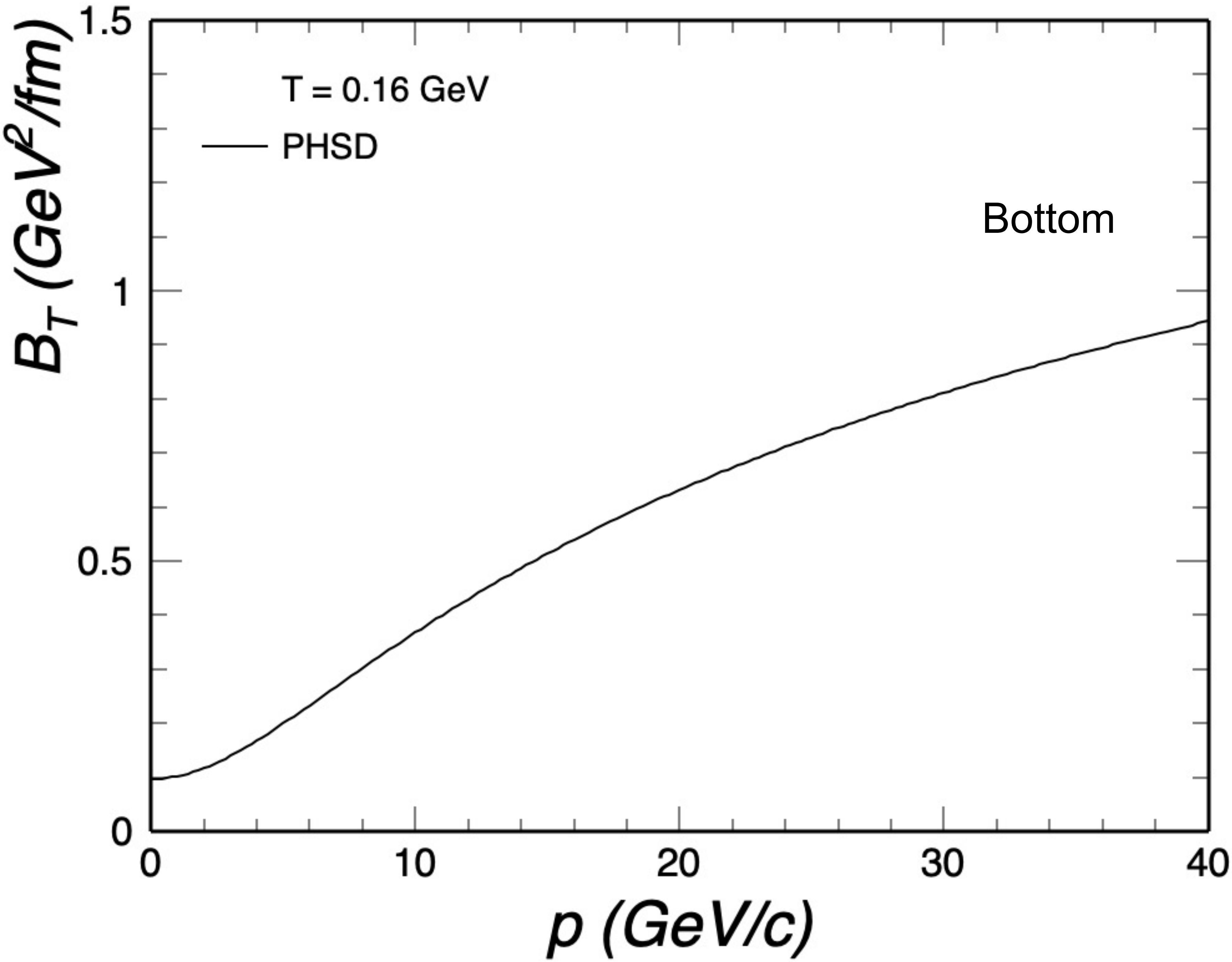

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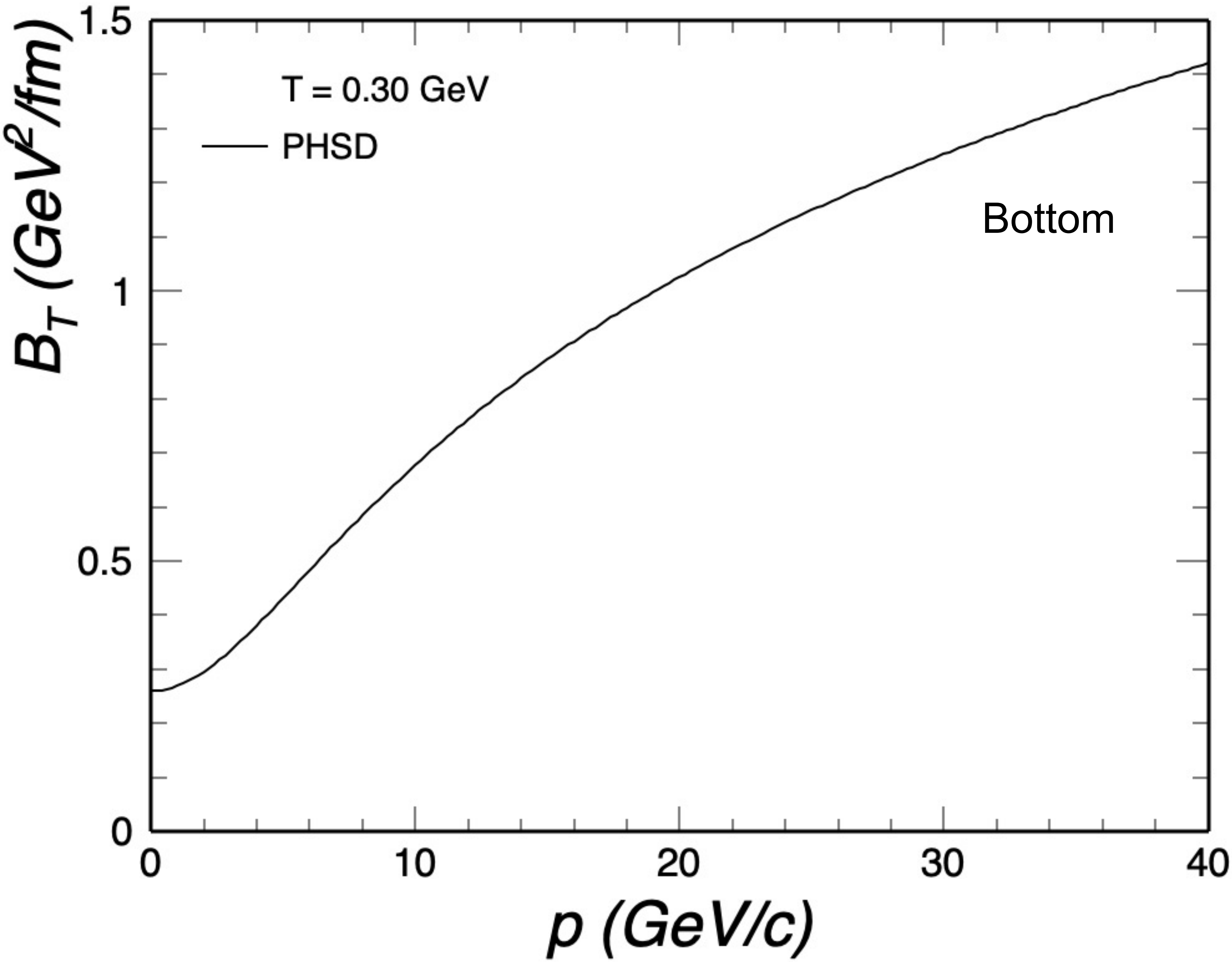
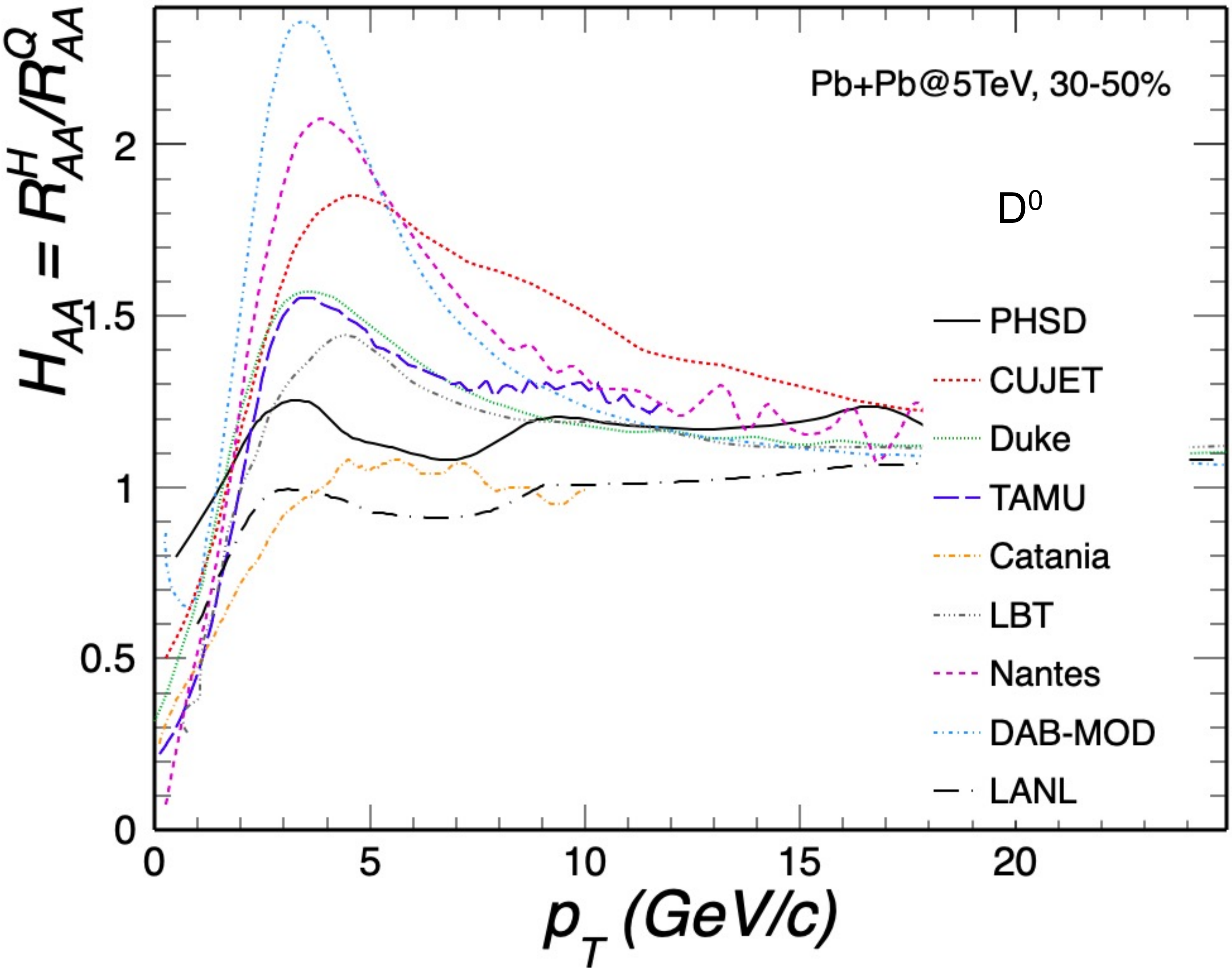


Q2(a) Compute H_AA(pT;T_H) = R_AA^H_Q (pT;T_H) / R_AA^Q(pT;T_H) , the ratio of the R_AA of the heavy meson (H_Q) just after hadronization to the R_AA of the heavy quark (Q) just before hadronization, for H_Q=D,Lambda_c (as available) and Q=c.



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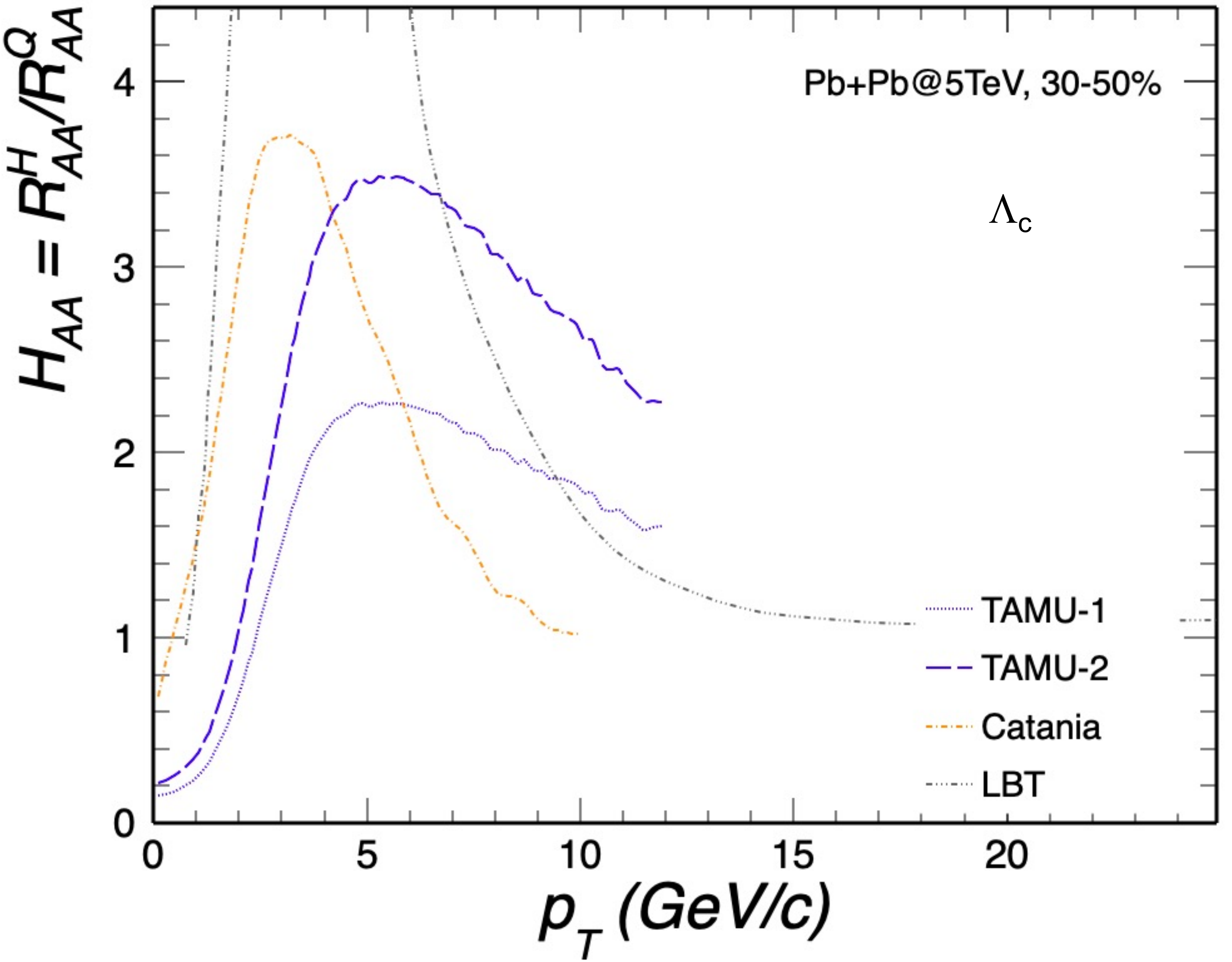
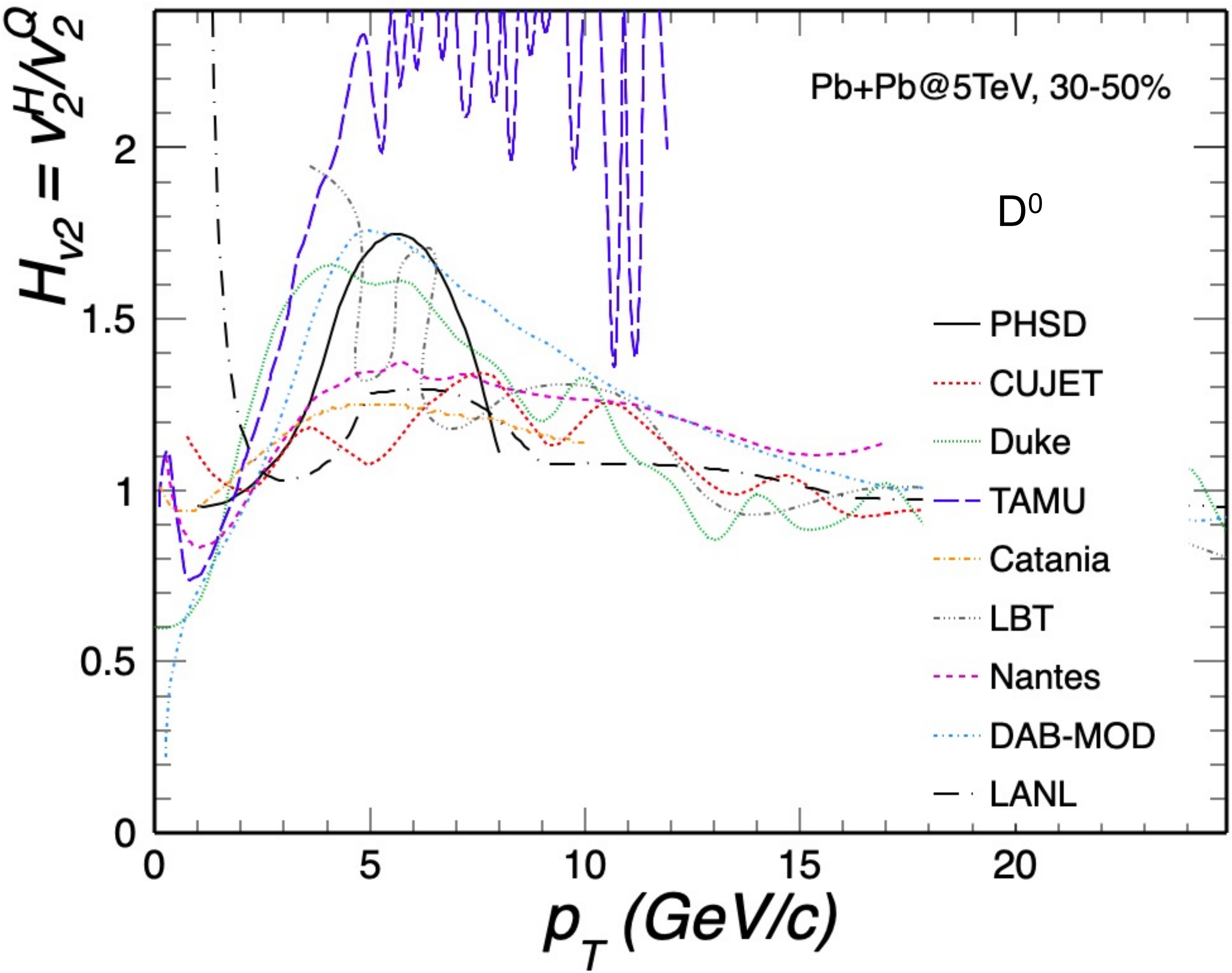


Q2(b) The same as (a) but for the elliptic flow, v2: H_v2(pT;T_H) = v2^H_Q (pT;T_H) / v2^Q(pT;T_H).



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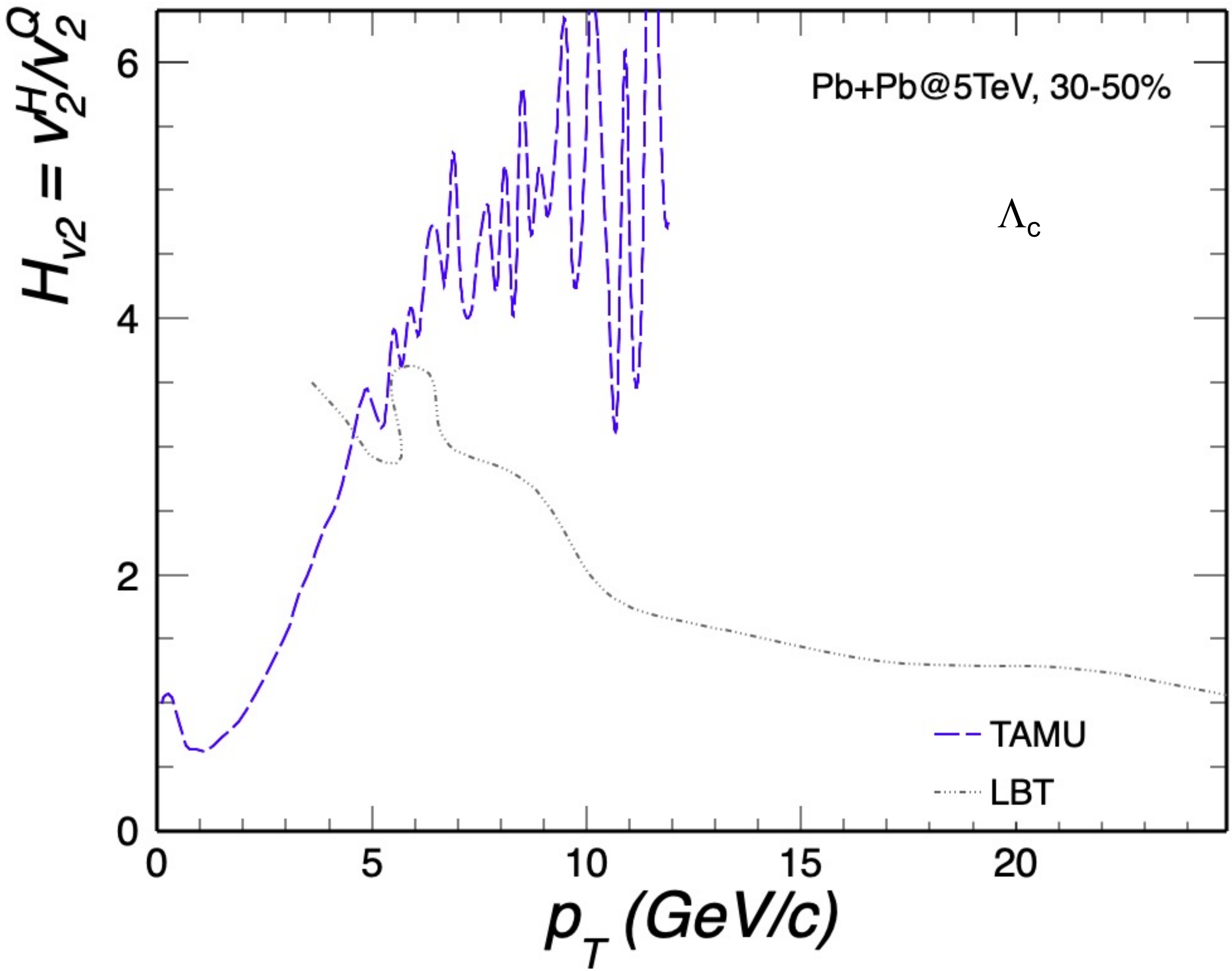

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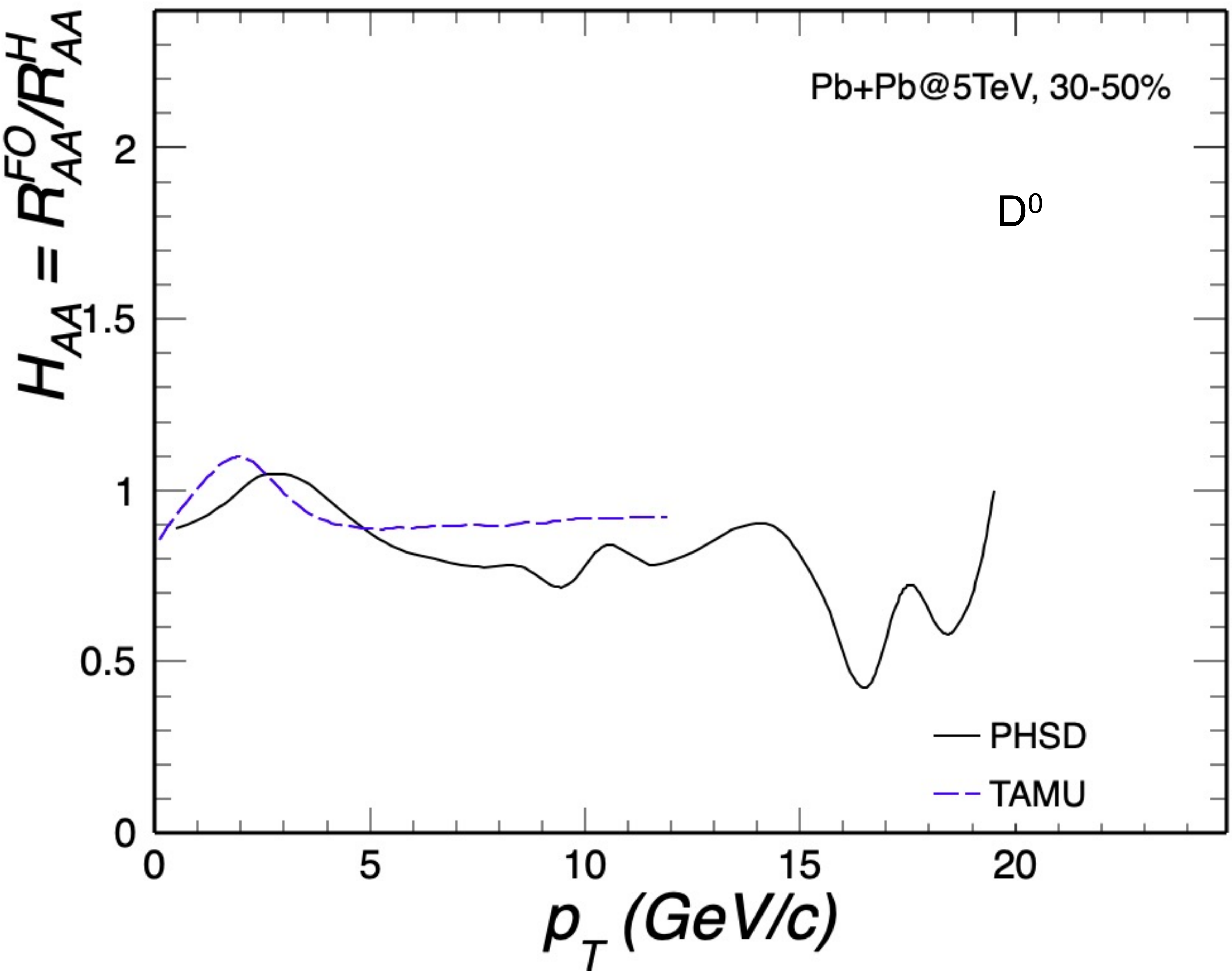

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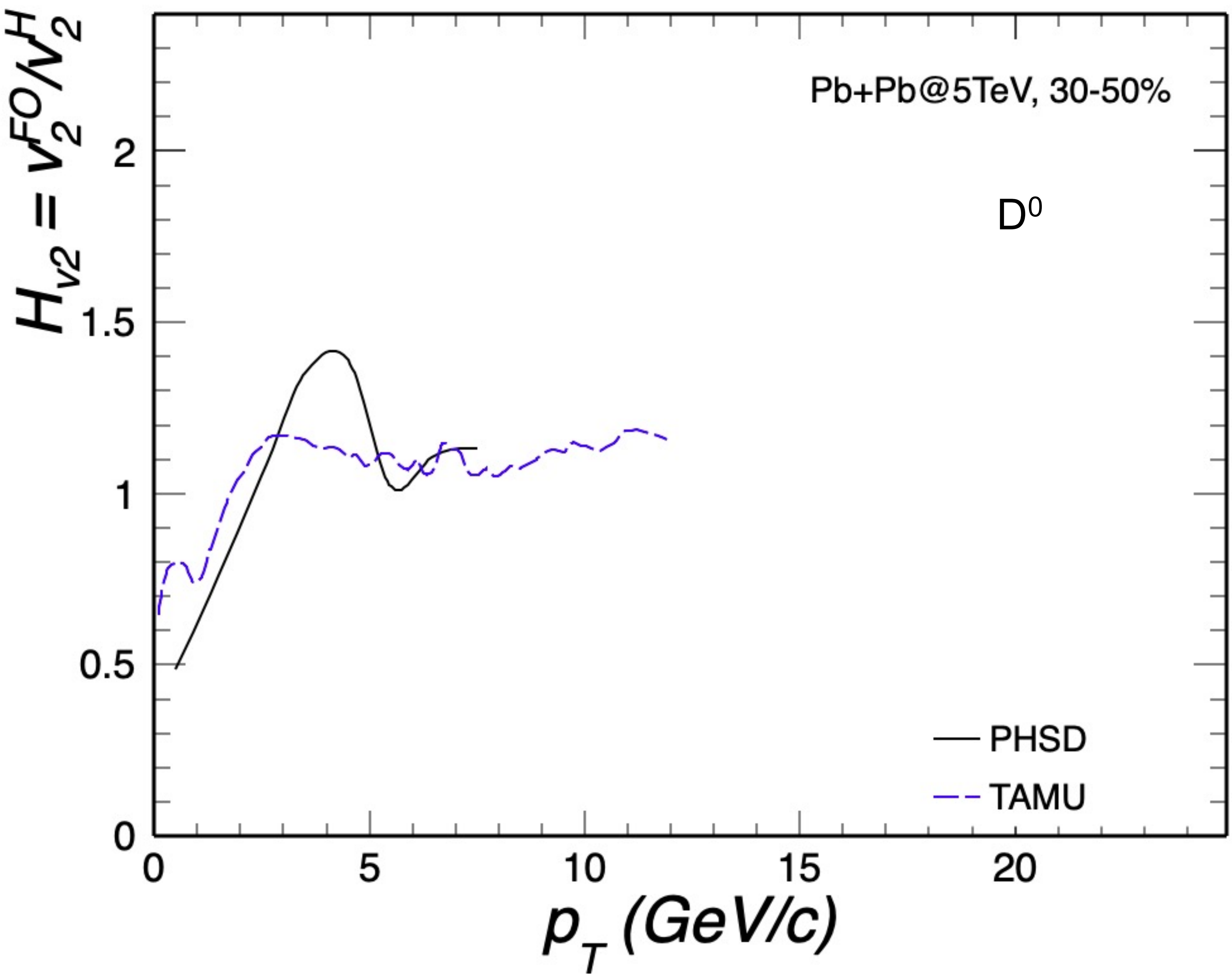
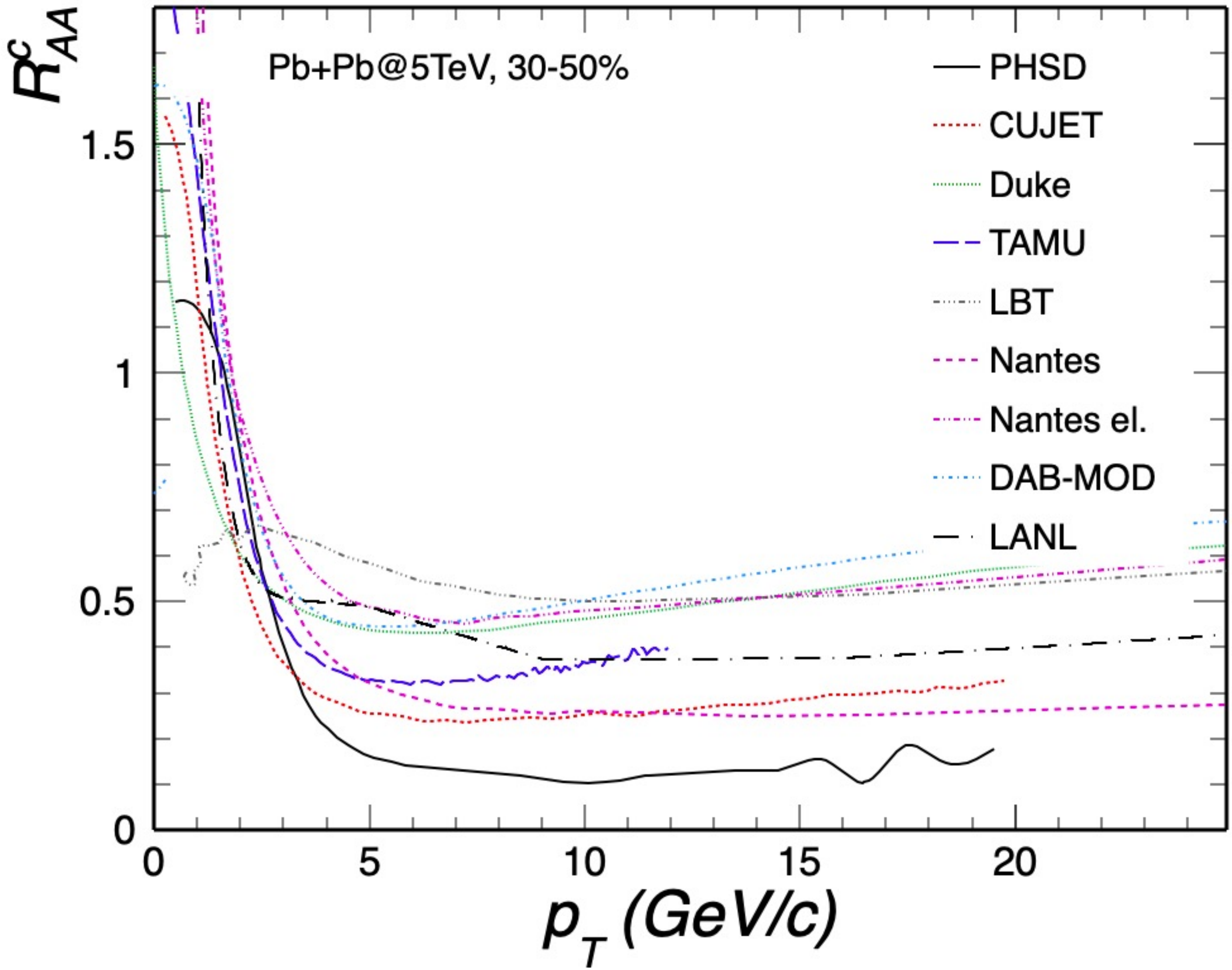


Q3(a) Renormalize the charm-quark transport coefficients with a temperature-dependent but momentum-independent K factor, K(T), as to obtain a temperature-independent value of D_s (2piT) == 4 (for Langevin approaches, D_s = T / [m_Q A(p=0)]); then compute R_AA and v2 of charm quarks right before hadronization for 30-50% 5TeV PbPb collisions within your model.



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