Checking Non-Flow Assumptions and Results via PHENIX
Published Correlations in $p+p$, $p+Au$, $d+Au$, and $^3$He+Au at $\sqrt{s_{NN}} = 200$ GeV [Phys. Rev. C 105, 024906 (2022)]

Jamie Nagle (University of Colorado Boulder)
Ron Belmont (University of North Carolina at Greensboro)
Sanghoon Lim (Pusan National University)
Blair Seidlitz (Lawrence Berkeley National Laboratory)

Quark Matter 2022
Poster Session
6 March 2022
Additional non-flow studies using published data tables

Closure is considerably violated in AMPT

R. Belmont et al
Quark Matter 2022, 6 March 2022 - Slide 2
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Non-flow over-subtraction also explored in S. Lim et al, Phys. Rev. C 100, 024908 (2019)
Since the template method over-correction the raw BBCS-FVTXS-CNT $v_3$, the truth is likely in between.

A firm understanding of this could shed a lot of light on various physics scenarios...
The standard PHENIX $v_3/v_2$ is lower than the ATLAS, while the non-flow corrected is above.
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The ratio is expected to be lower for lower collision energies in almost all physics scenarios—Lower energy, shorter lifetime, more damping of higher harmonics.
Longitudinal dynamics in small systems

- $dN_{ch}/d\eta$ from AMPT, $v_3(\eta)$ from (super)SONIC
- The likely much stronger pseudorapidity dependence of $v_3$ compared to $v_2$ is an essential ingredient in understanding different measurements with different kinematic acceptance
Extra Material
Additional non-flow studies using published data tables


- The BBCS-FVTXS-CNT combination minimizes non-flow, so subtraction doesn’t make too much difference
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• There’s a larger relative change for $v_3$ compared to $v_2$, but the smaller value of $v_3$ makes the non-flow subtraction more sensitive to non-closure
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