

# Initializing BSQ Across System Size With Open Source ICCING

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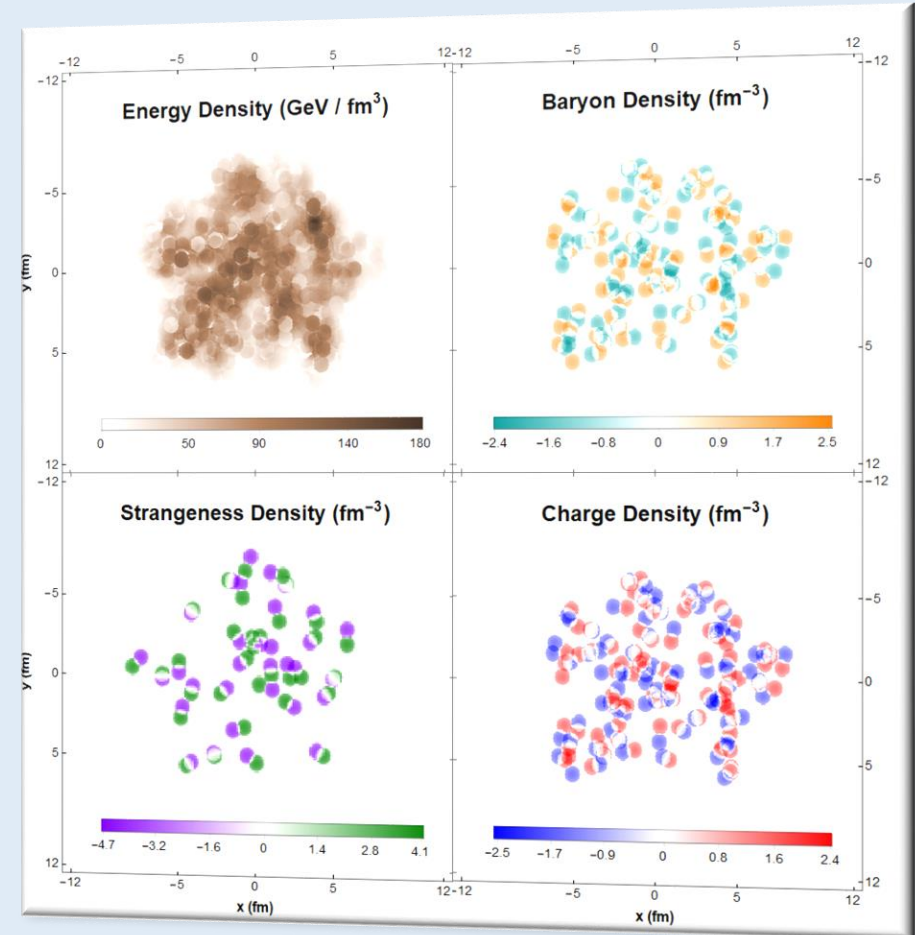
Matthew Sievert\*\*

Jacquelyn Noronha-Hostler\*

- ICCING (Initial Conserved Charges in Nuclear Geometry) samples a ( $g \rightarrow qq^-$ ) splitting function
- ICCING in C++, open source soon

**ICING:** M. Martinez, M. D. Sievert, D. E. Wertepny, P. Carzon, and J. Noronha-Hostler, 1911.12454 (in preparation)

M. Martinez, M. D. Sievert, D. E. Wertepny, P. Carzon, and J. Noronha-Hostler, 1911.10272 (in preparation)



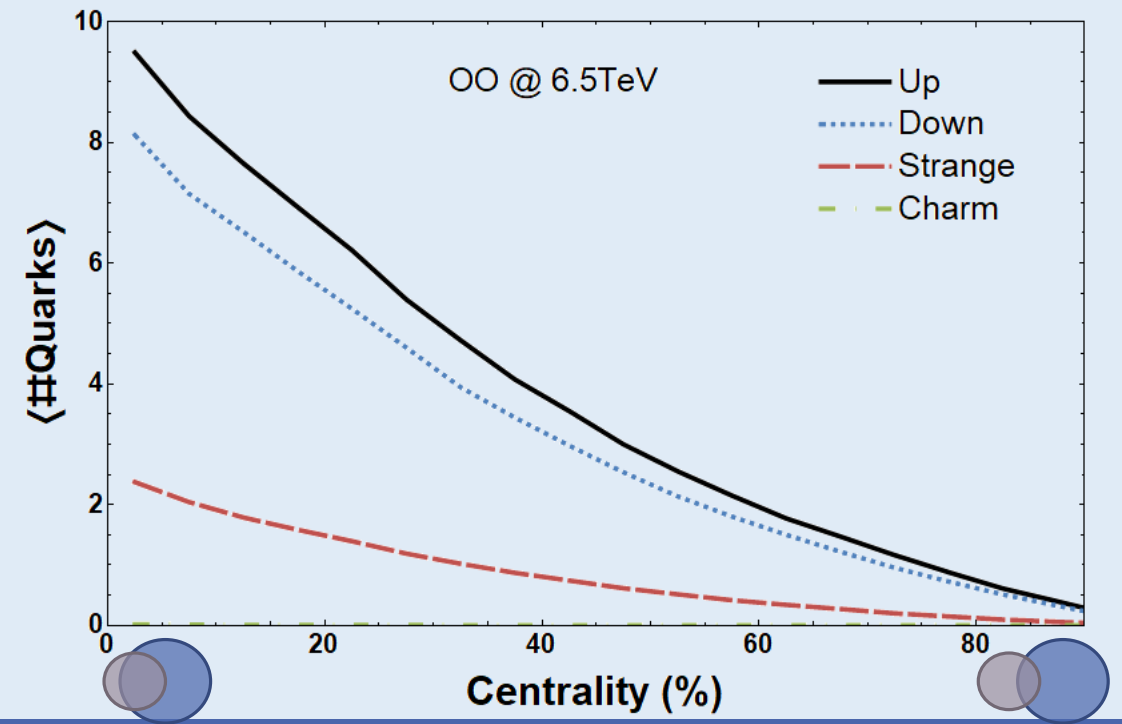
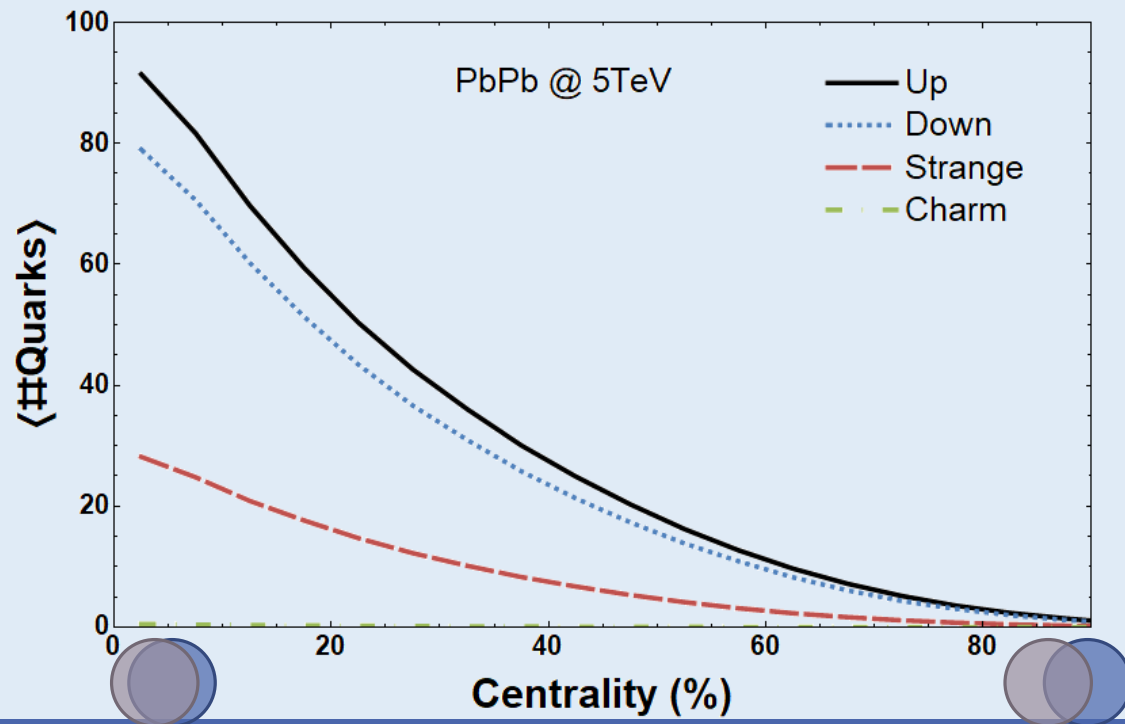
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# Quark Multiplicities Across System Size

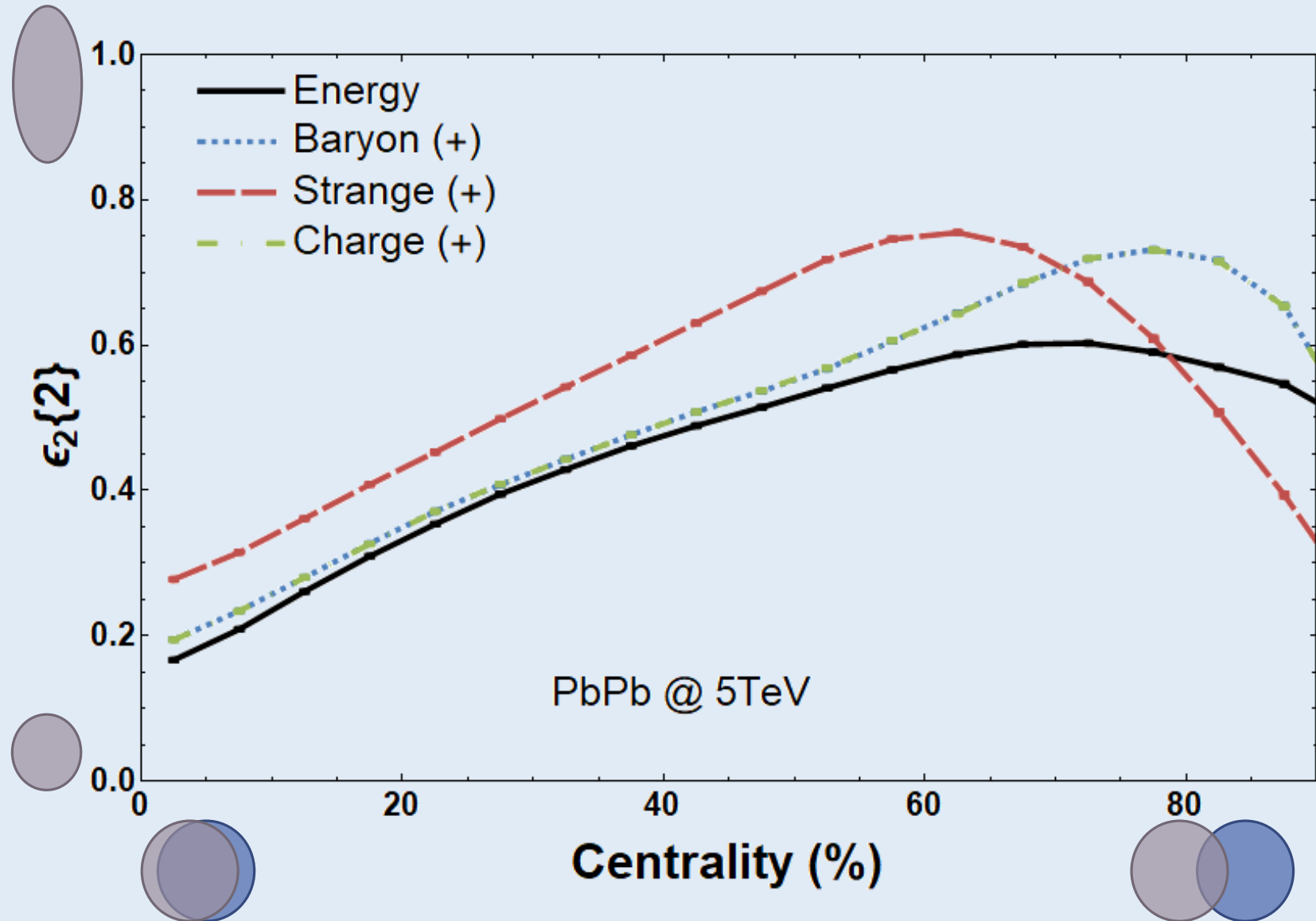
- Tenfold increase in quarks from OO to PbPb though same ratios

- Depends on  $\alpha_s$  and gluon radius ( $r$ )
- Future
  - Retune  $\alpha_s$  and  $r$  to obtain quark content from particle yields
  - More OO results



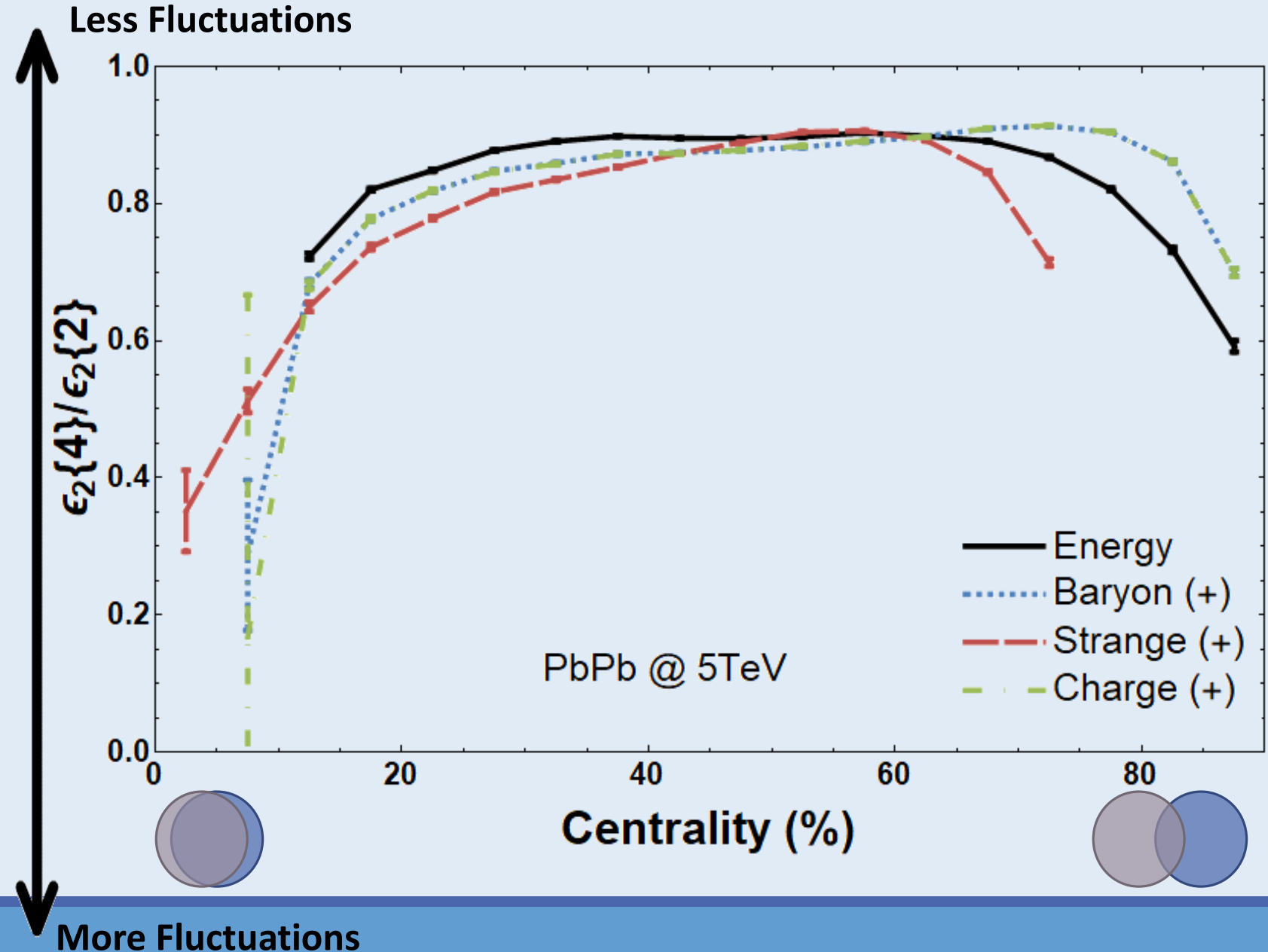
# Comparison of Energy and Conserved Charge Ellipticities

- ICCING energy  $\epsilon_2\{2\}$  matches Trento
- Baryon/Charge follow energy up to 60% Centrality
- Strange quarks produced in hotspots explains difference from Baryon/Charge



# Fluctuations in Ellipticity

- Trends hold from original analysis
- Baryon/Charge follows Energy trend but departs in magnitude
- Significant difference between Baryon/Charge and Strange
- Good estimate for final flow harmonic
- Can be used to constrain parameters



# Conclusions and Future

- ICCING Quark multiplicities reproduced
  - PbPb energy  $\epsilon_2\{2\}$  matches previous results
  - OO and PbPb multiplicities differ by 10x but contain same quark ratios
  - Distinct difference in Strange and Baryon/Charge
  - Baryon/Charge  $\epsilon_2\{2\}$  tracks energy in central and midcentral,  $\epsilon_2\{4\}/\epsilon_2\{2\}$  differs in magnitude
  - $v_2\{4\}/v_2\{2\}$  can restrain parameters
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- More OO results
  - Publish open-source ICCING
  - Will run in BSQ hydro code, See Travis Dore (IS Thur. 16:15) and Debora Mroczek (NT Mon. 18:40)