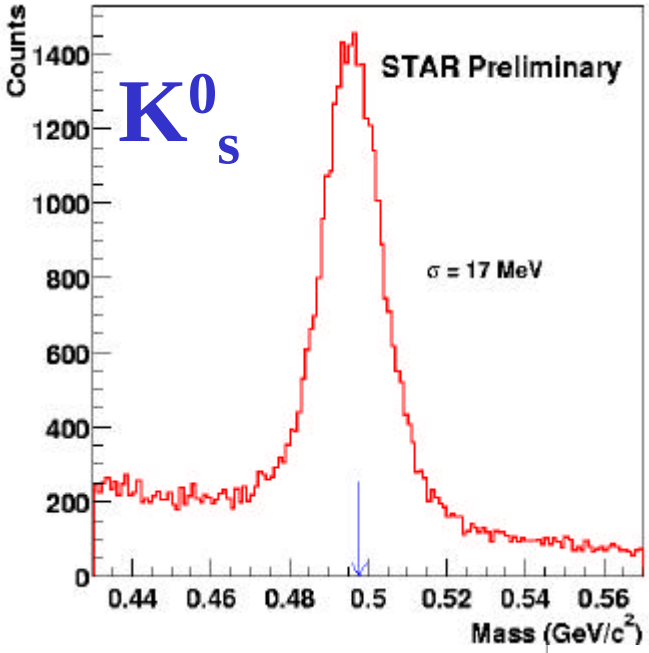
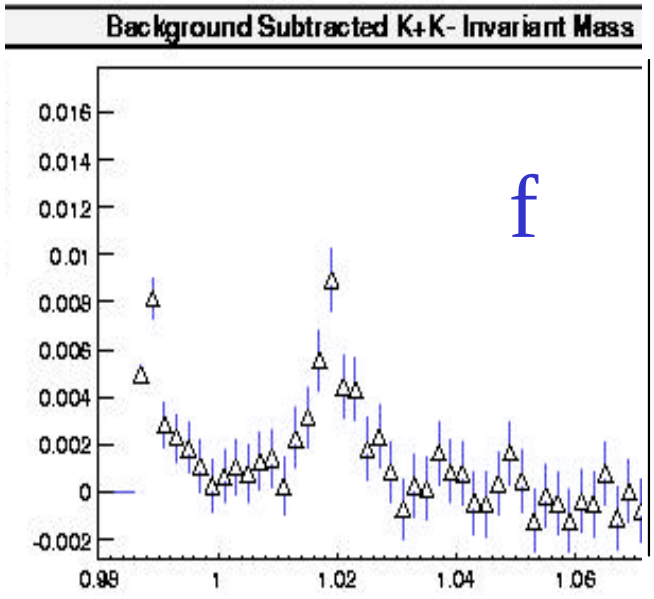
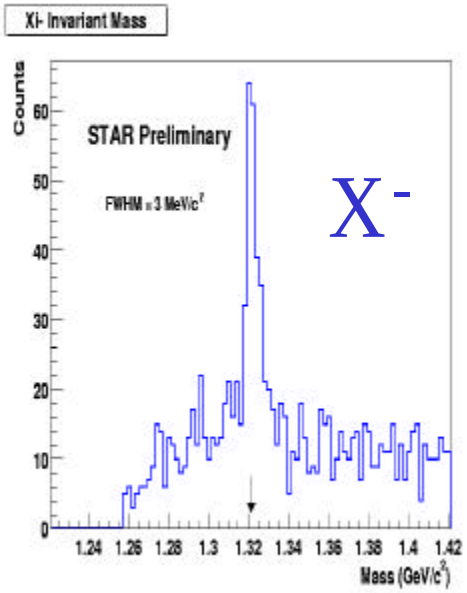
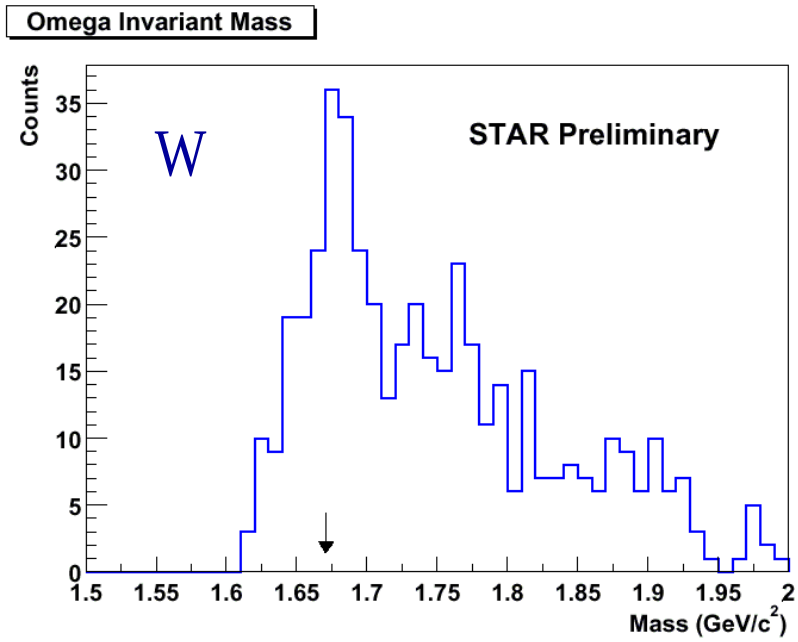
Strange Particle: More To Come ...

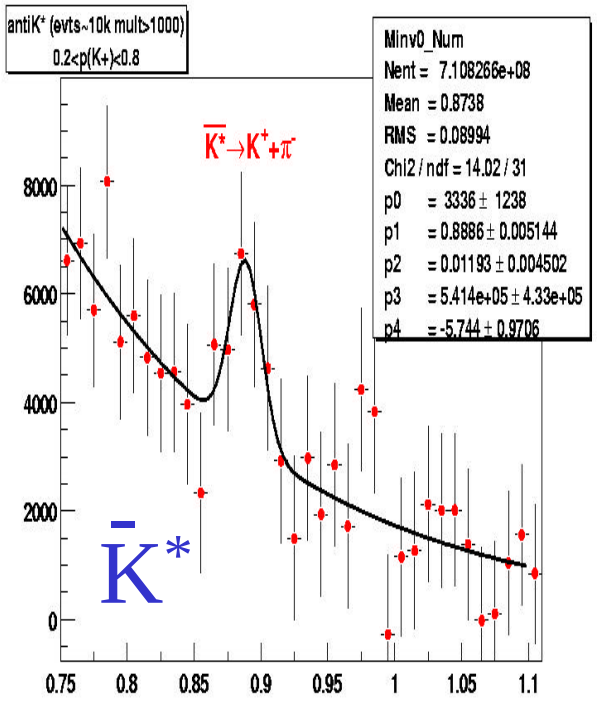




Long way from "peaks" to final spectra and ratios but the signal strength is sufficient in all cases.







First Results: Two particle interferometry (HBT)

Correlation function for identical bosons:

$C(p_1, p_2) = P(p_1, p_2)/ (P(p_1) P(p_2)) = 1 + |\rho(q)|^2$

ρ : Fourier transform of the density distribution

$q = p_1 - p_2$

Here: Bertsch-Pratt parametrization

$C(q_{out}, q_{side}, q_{long}) = 1 + \lambda \exp (\Sigma q_i^2 R_i^2)$

1d projections of 3d Bertsch-Pratt

12% most central out of 170k events

Coulomb corrected

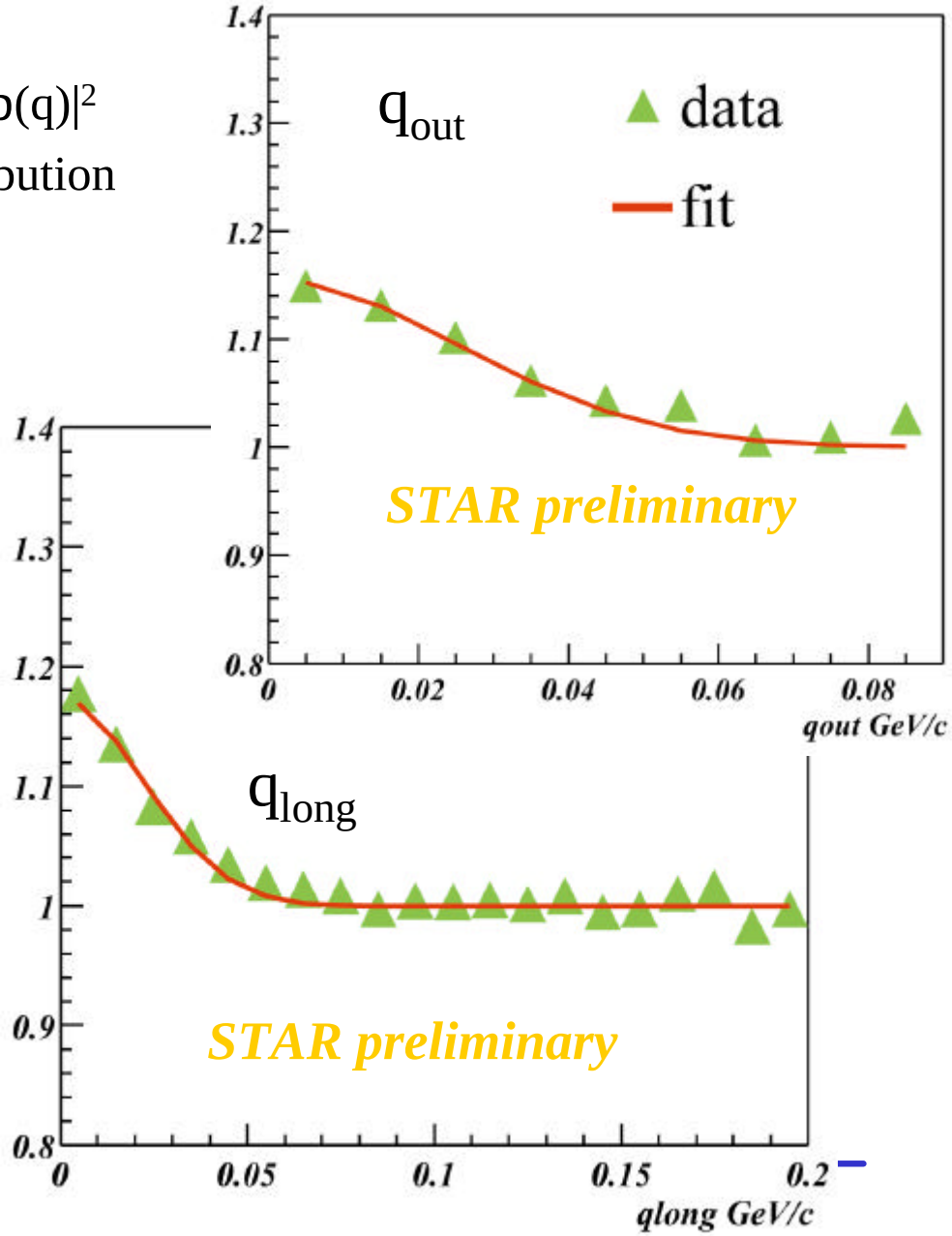
$|y| < 1$, $0.125 < p_t < 0.225$

$R_{out} = 5.44 \pm 0.17^{stat}$

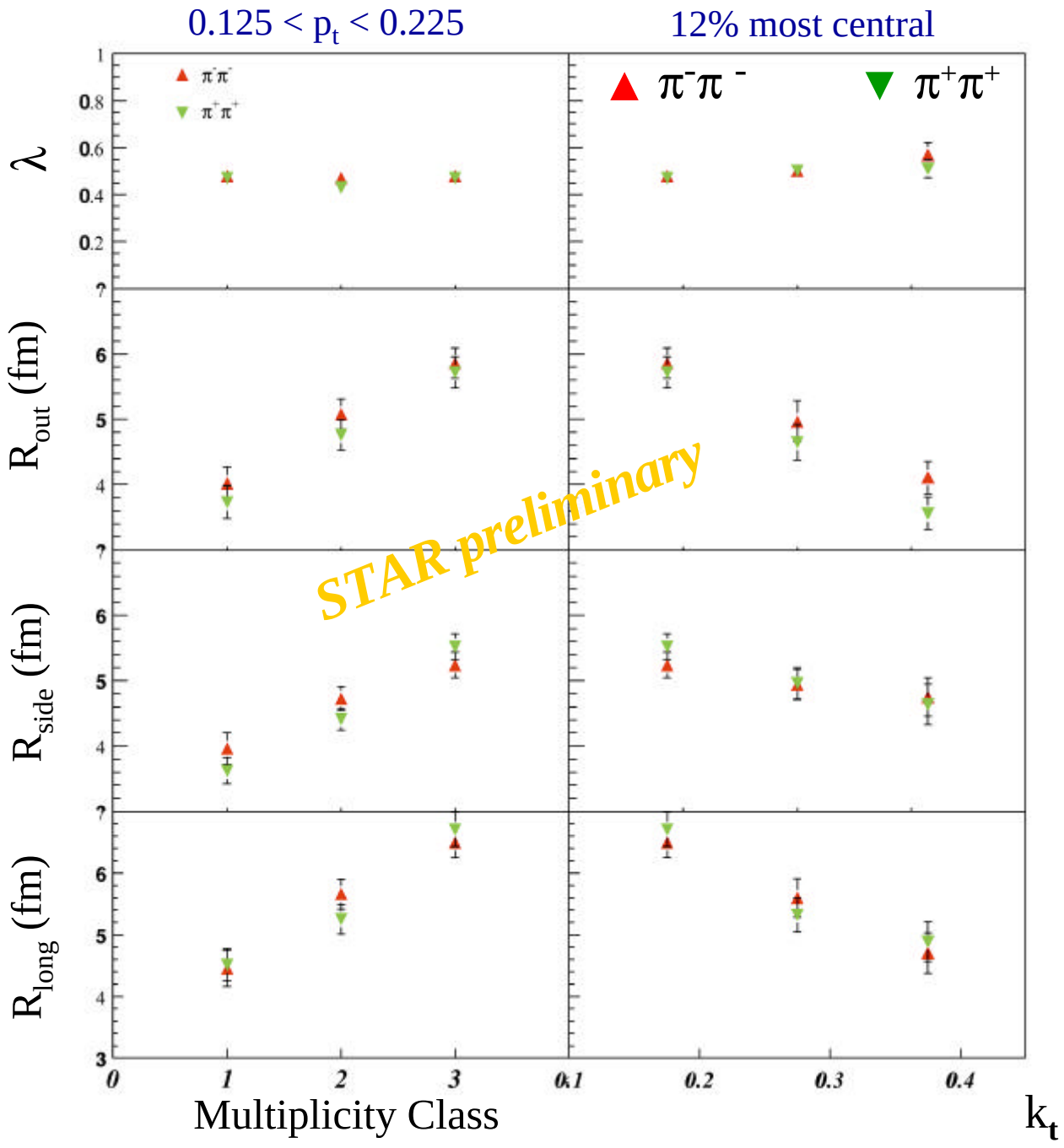
$R_{side} = 5.34 \pm 0.15^{stat}$

$R_{long} = 6.27 \pm 0.18^{stat}$

$\lambda = 0.46 \pm 0.016^{stat}$



HBT:
Radii dependence on centrality and k_t

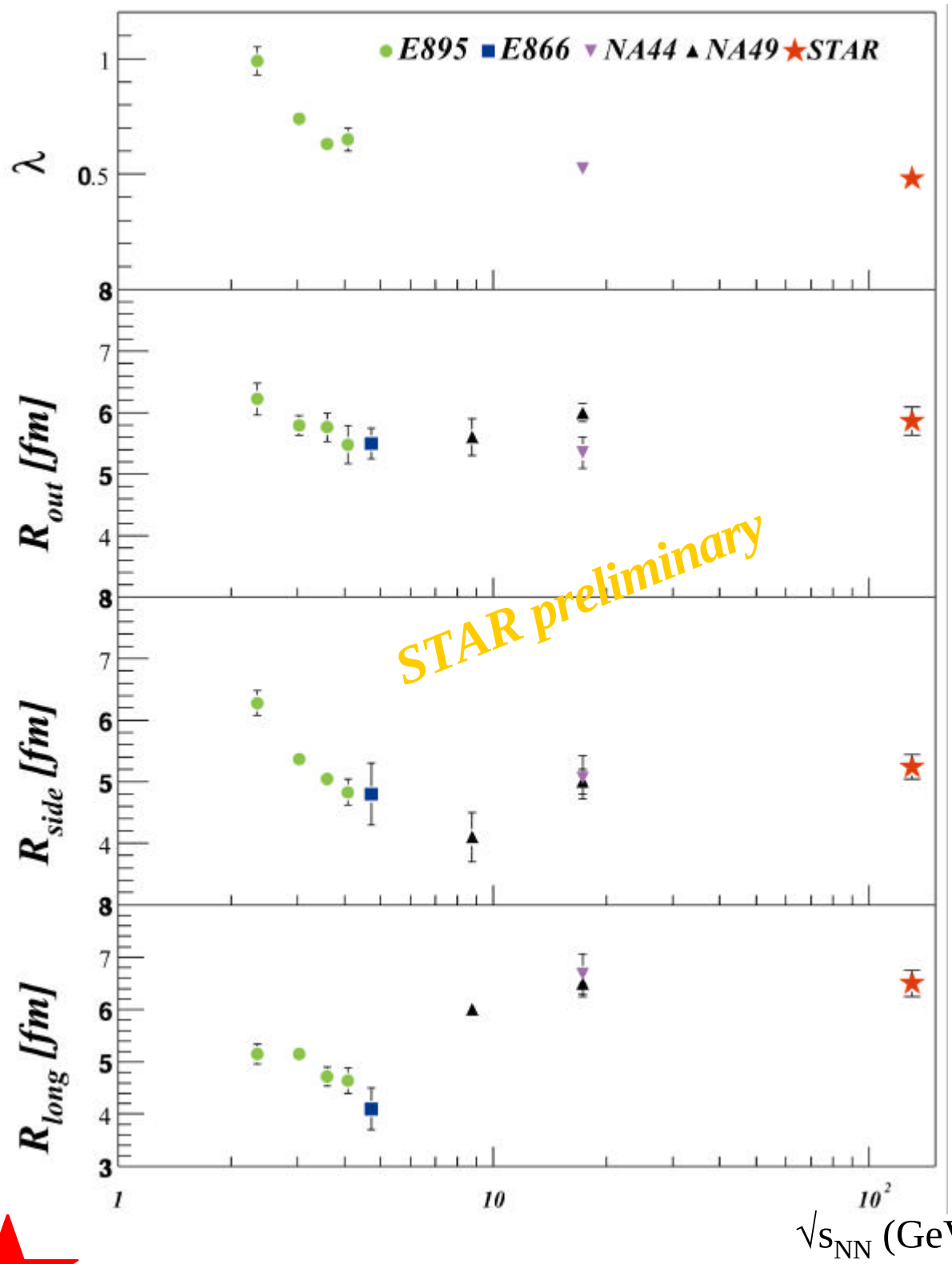


1: 30-70%
2: 12-30%
3: 0-12%

$0.125 < p_t < 0.225$
$0.225 < p_t < 0.325$
$0.325 < p_t < 0.425$

STAR

HBT: Comparison with AGS and SPS



First Results: Elliptic Flow

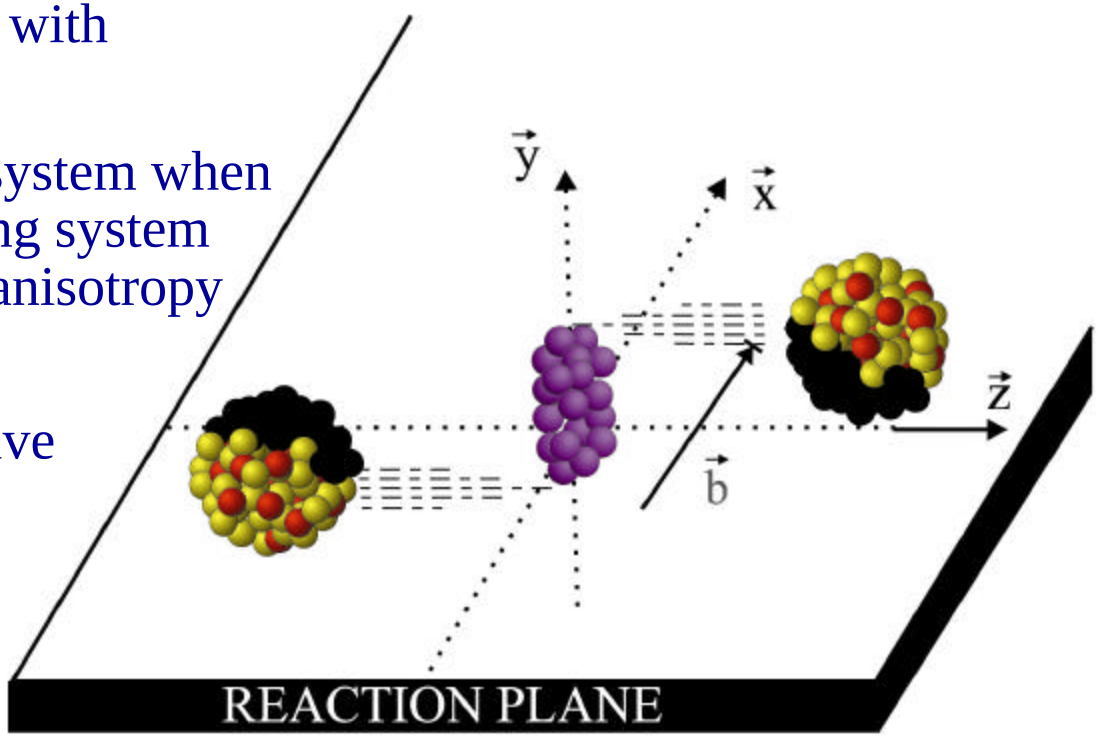
First STAR paper: (submitted to PRL, nucl-ex/0009011)
Elliptic flow of charged particles at midrapidity in Au+Au at $\sqrt{s_{NN}}$ = 130 GeV

Anisotropic emission of particles “in” or “out” of reaction plane

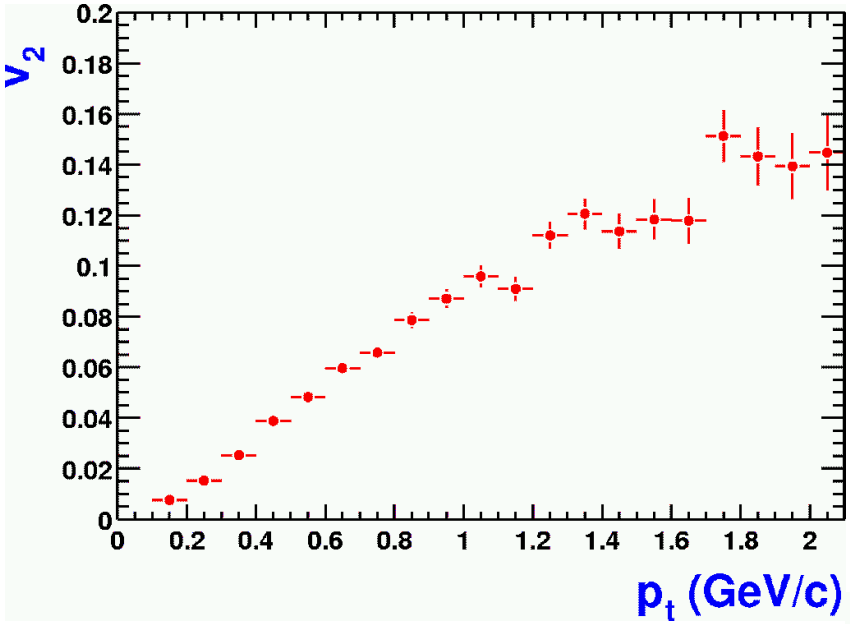
v_2: 2nd harmonic Fourier coefficient in azimuthal distribution of particles with respect to the reaction plane

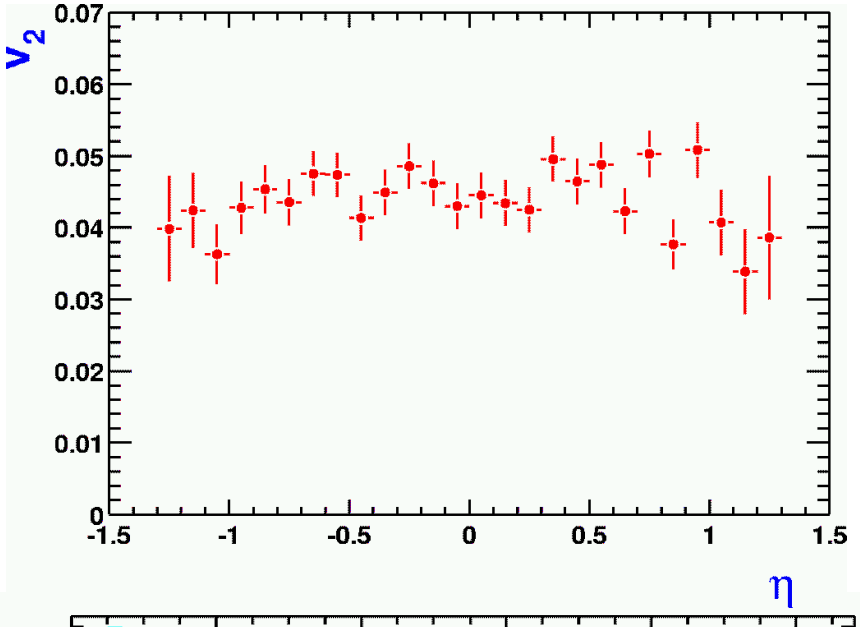
Origin: spatial anisotropy of the system when created and rescattering of evolving system
spatial anisotropy → momentum anisotropy

⇒ Elliptic flow observable sensitive to early evolution of system



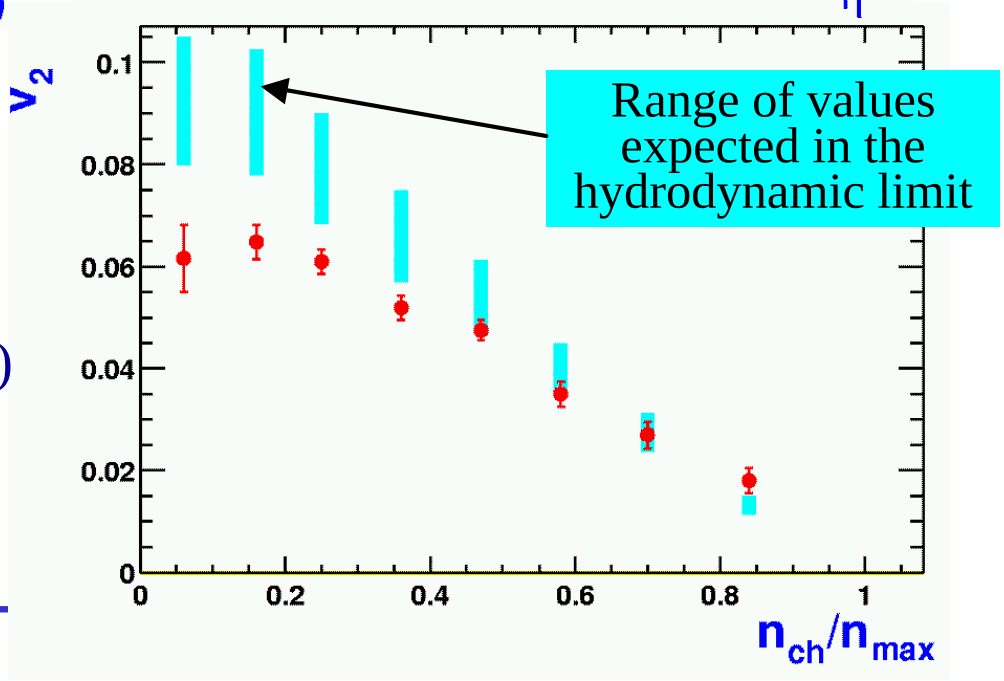
Elliptic Flow: v_2 dependence on p_t, η, and centrality





Findings:

- v_2 up to 6% for peripheral
- decreases for central events
- larger than AGS and SPS (< 4%)
- higher degree of thermalization?



Summary

STAR had a successful summer run:

- ~1.5 million good events recorded (*Trigger: E. Judd BE007*)
- TPC run extremely well (*E. Yamamoto BE.008*)
  - stable and uninterrupted operation
  - dE/dx and resolution close to design value
- RICH up and running (*B. Lasiuk KC.006*)
- Successful test of 1 SVT ladder (*R. Willson KC.005*)

One month after end of run lots of results:

- Elliptic flow (*R. Snellings JC.004*)
- Two particle interferometry (HBT) (*D. Flier DC.007*)
- Particle ratios $\bar{p}/p$, $\bar{\Lambda}/\Lambda$ (*N. Xu JC.013, H. Long KC.004*)
- Multiplicity distribution (*M. Calderon JC.002*)
- p_t and η distributions for negative hadrons (*JC.002*)
- p_t distribution for π^- (*JC.002*)
- CP violation in RHI (*E. Finch KC.009*)
- Event-by-Event: (*J. Reid JC.003*)
  - <pt> fluctuations, 2-point analysis, charge fluctuations
- Peripheral collisions: ρ production (*J. Seger KC.011*)

Impossible to sum it up yet !!!

Novel results and lots of interesting findings every day

Outlook

Analysis:

- Continue analysis of $\sqrt{s_{NN}}$ = 130 GeV data
- More publications to come this year
- Prepare for year-2

STAR in 2001:

- Integration of SVT, FTPCs, more EMC modules, TOF patch
- Full field
- Focus on Au+Au at top energies (also important Si+Si and pp)

Lots of additional physics in year-2 with more detectors and statistics

- Forward rapidities (FTPC)
- Better tracking and primary and secondary vertex resolution (SVT)
- Electromagnetic probes (EMC)
- High-p_t physics (EMC + L3 trigger)
- Expanded PID Range (dE/dx → TOF patch→ RICH)