

Current contributions
from European institutions
(Czech Republic, Germany, Hungary, Poland)

Jana Bielcikova



STAR 25-year celebration
BNL, December 17-18, 2025

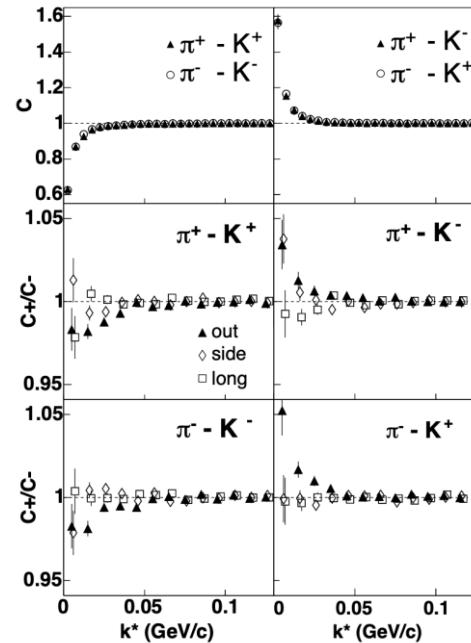
Warsaw University of Technology

Physics focus: femtoscopy and heavy-flavor production

- Correlation of various particle pairs, focused on space-time and dynamic properties of the emission process and studies of strong interactions.
- Heavy flavor studies focused on charm production, including two-particle correlations.

Group members: Katarzyna Gwizdziel, Daniel Kikola, Jędrzej Kolas, Małgorzata Kurach, Janusz Oleniacz, Ashutosh Kumar Pandey, Diana Pawłowska, Jan Pluta, Priyanka Roy Chowdhury, Srikanta Kumar Tripathy, Daniel Wielanek, Hanna Zbroszczyk

K^0_S - K^0_S
femtoscopy
correlations



GO MOBILE » | ACCESS BY POLITECHNIKA WARSZAWSKA

Pion-Kaon Correlations in Central Au + Au Collisions at $\sqrt{s_{NN}} = 130$ GeV

J. Adams³, C. Adler¹², M. M. Aggarwal²⁵, Z. Ahammed²⁸, J. Amonett¹⁷, B. D. Anderson¹⁷, M. Anderson⁵, D. Arkhipkin¹¹, G. S. Averichev¹⁰ et al. (STAR Collaboration)

Show more ▾

Phys. Rev. Lett. **91**, 262302 - Published 31 December, 2003

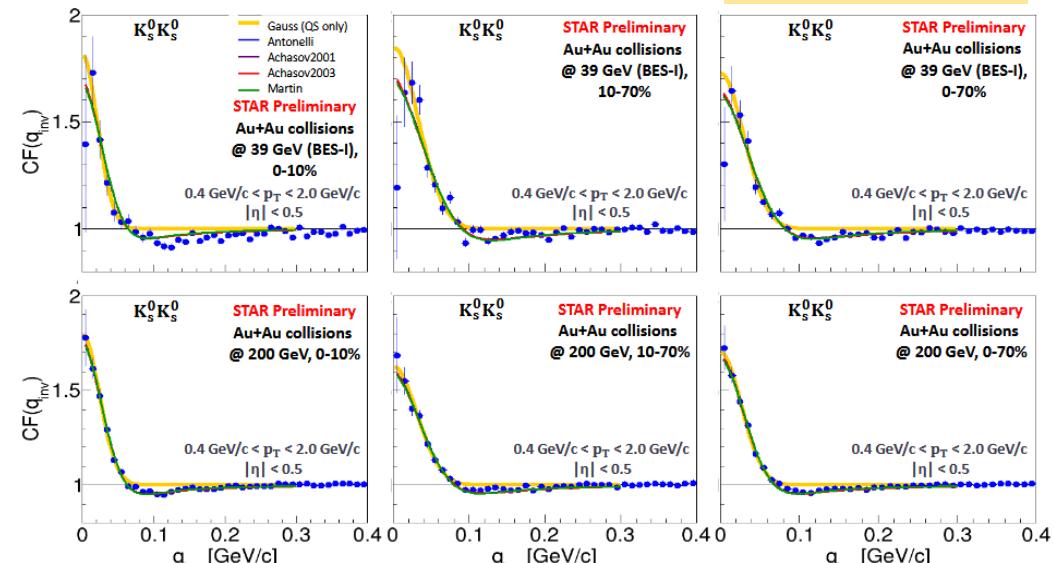
DOI: <https://doi.org/10.1103/PhysRevLett.91.262302>

Non-identical particle femtoscopy measurements in the STAR Beam Energy Scan program

The STAR Collaboration

More results in progress ...

Diana Pawłowska



Warsaw University of Technology

Physics focus: femtoscropy and heavy-flavor production

D⁰ - hadron femtoscopic correlations

- Correlation of various particle pairs, focused on space-time and dynamic properties of the emission process and studies of strong interactions.
- Heavy flavor studies focused on charm production, including two-particle correlations.

Group members: Katarzyna Gwizdziel, Daniel Kikola, Jędrzej Kolas, Małgorzata Kurach, Janusz Oleniacz, Ashutosh Kumar Pandey, Diana Pawłowska, Jan Pluta, Priyanka Roy Chowdhury, Srikanta Kumar Tripathy, Daniel Wielanek, Hanna Zbroszczyk

OPEN ACCESS | GO MOBILE » | ACCESS BY POLITECHNIKA WARSZAWSKA

Measurements of γ states production in $p + p$ collisions at $\sqrt{s} = 500$ GeV with STAR: Cross sections, ratios, and multiplicity dependence

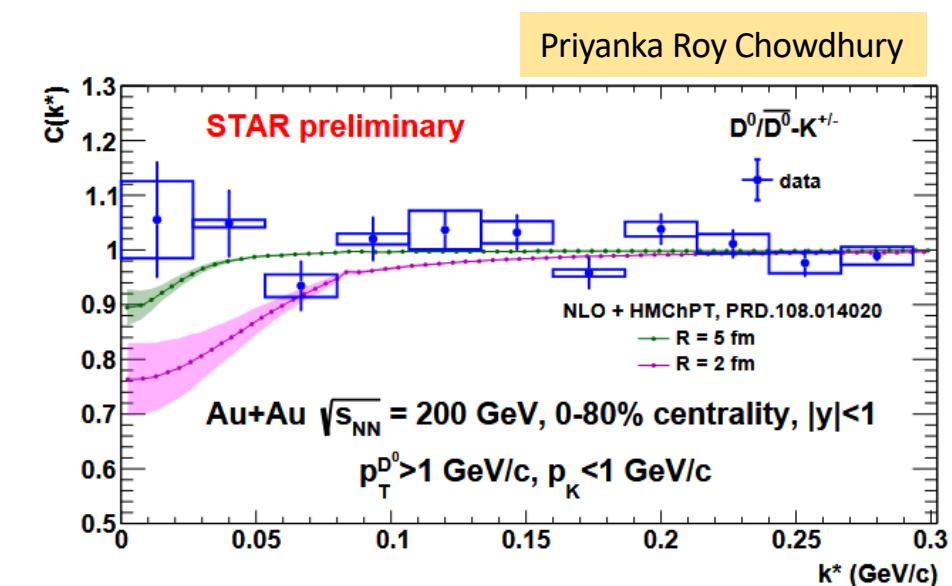
B. E. Aboona⁵⁷, J. Adam¹⁷, L. Adamczyk³, I. Aggarwal⁴⁴, M. M. Aggarwal⁴⁴, Z. Ahmed⁶⁵, Alshammri³³, E. C. Aschenauer⁷, S. Aslam²² et al. (STAR Collaboration)

Show more ▾

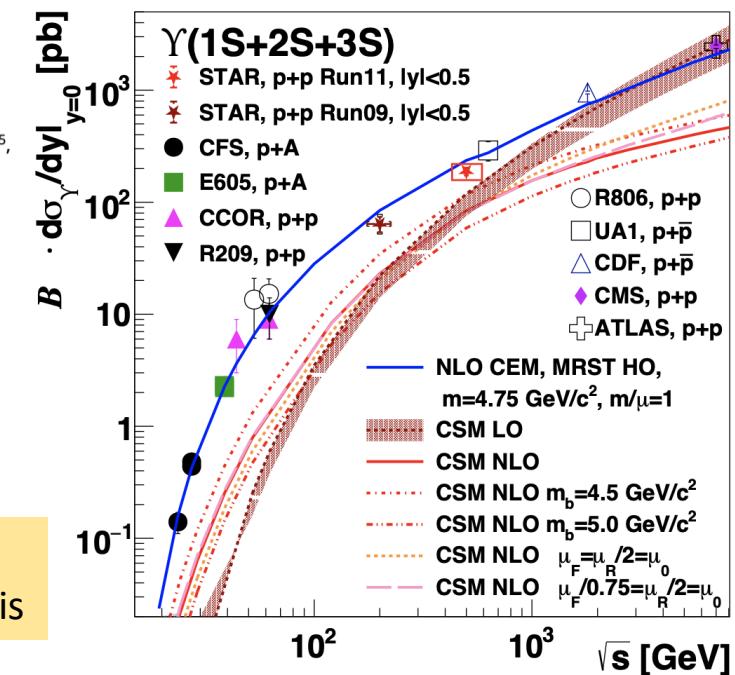
Phys. Rev. D 112, 032004 – Published 15 August, 2025

DOI: <https://doi.org/10.1103/bsyx-qtjp>

Daniel Kikola in collaboration with CTU Prague and UC Davis



Phys. Rev. D112 (2025) 32004



Physics focus:

- Studies of diffractive interactions in pp collisions (Run 15/Run 17).
- Production of charged particles in single and central diffraction at $\sqrt{s} = 200$ and 510 GeV
 - multiplicities of identified and non-identified hadrons, baryon-number transport in single and central diffraction
- Exclusive production of K^0_S and Λ - $\bar{\Lambda}$ pairs in pp at $\sqrt{s} = 510$ GeV
 - production of strange quarks in the double Pomeron exchange process
- Inclusive production of strange hadrons (K^0_S , ϕ , Λ) in single and central diffraction
 - insight into the strange-quark content of the Pomeron

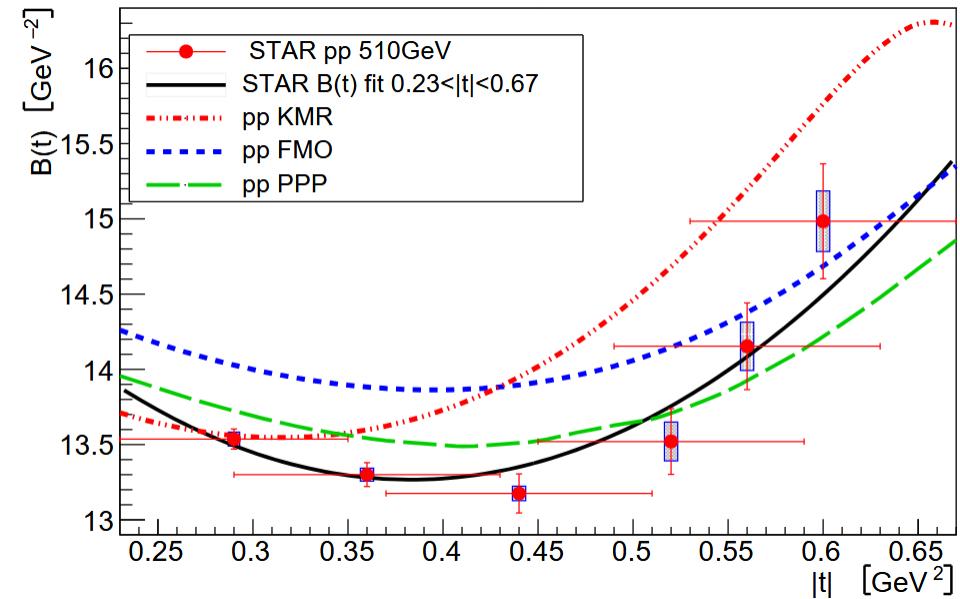


Letter

Results on elastic cross sections in proton-proton collisions at $\sqrt{s} = 510$ GeV with the STAR detector at RHIC

The STAR Collaboration

Phys. Lett. B 852 (2024) 138601



Elastic Cross Sections in pp Collisions at 510 GeV

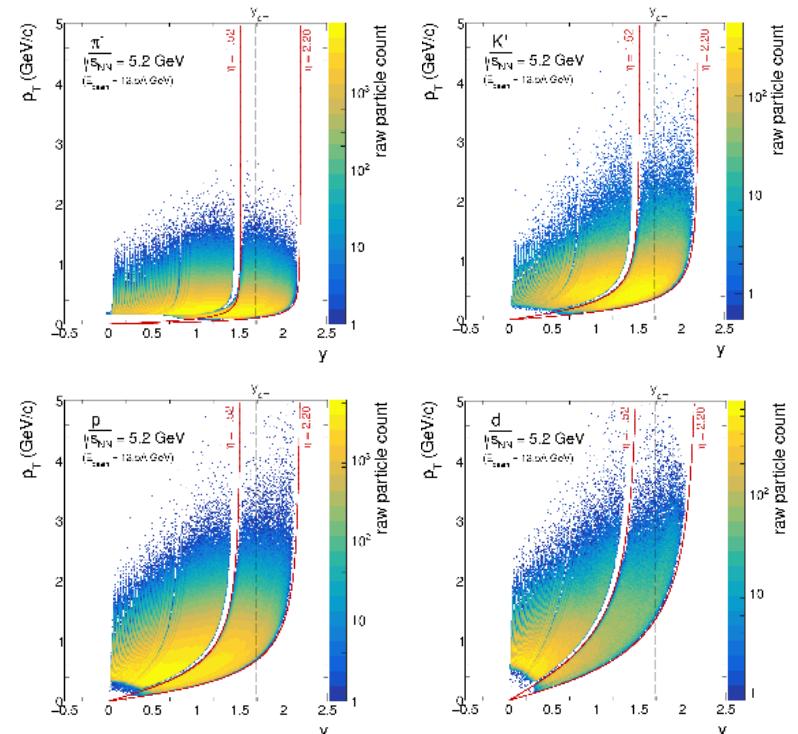
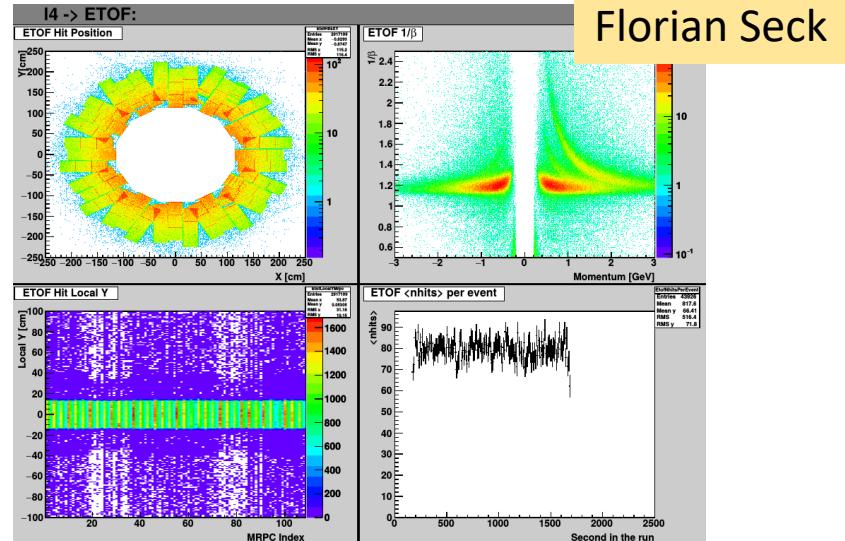
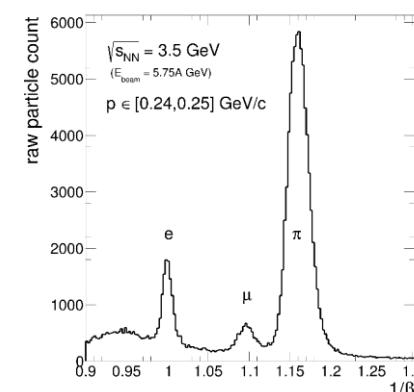
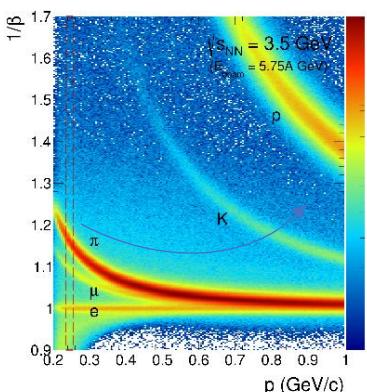
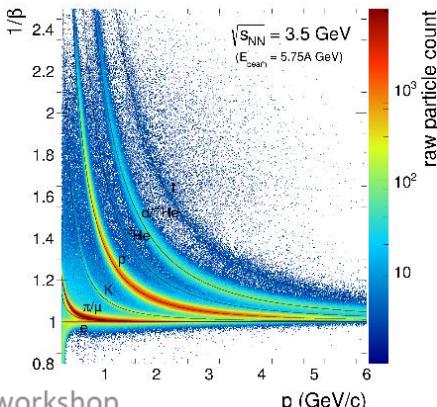
Group members: Mariusz Przybycien, Leszek Adamczyk, Sneha Bhosale (postdoc), Adam Watroba (PhD student), A. Kot (student)

Software coordination for the eTOF in the BES-II program
(FAIR phase-0 project of CBM)
→ essential for mid-rapidity PID in the FXT program

Florian Seck

Development of:

- Data structures to store eTOF information
- Data reconstruction chain: from raw detector signals to PID for matched tracks, start-less (eTOF-only)
T0 for FXT collisions
- Online & offline low-level data monitoring
- Online high-level data QA ($1/\beta$ vs. momentum plots etc.)
- Iterative calibration procedure

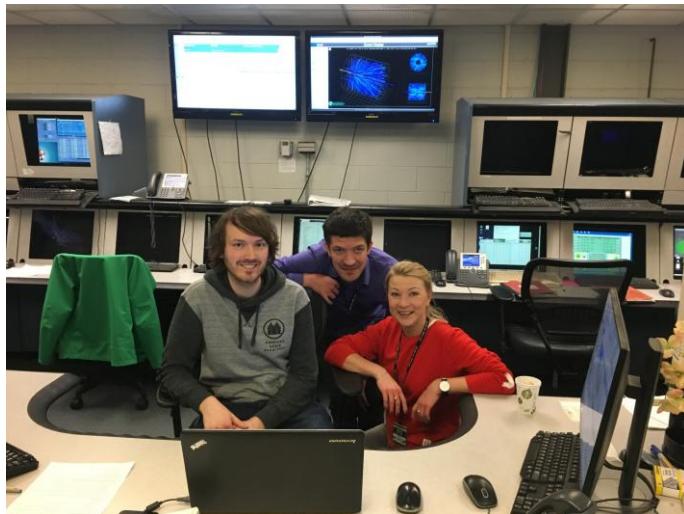


Technical University, Darmstadt

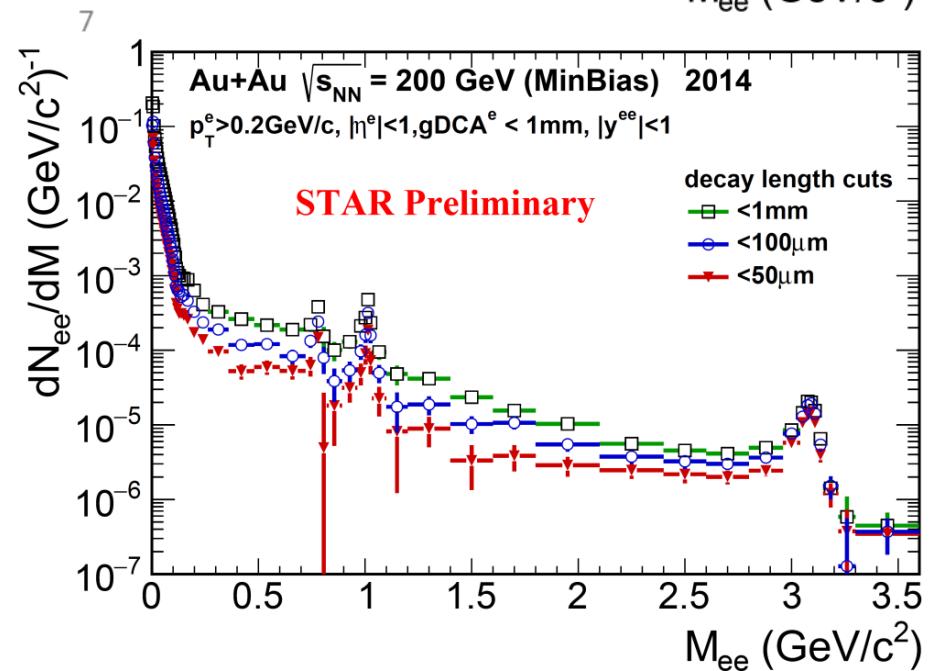
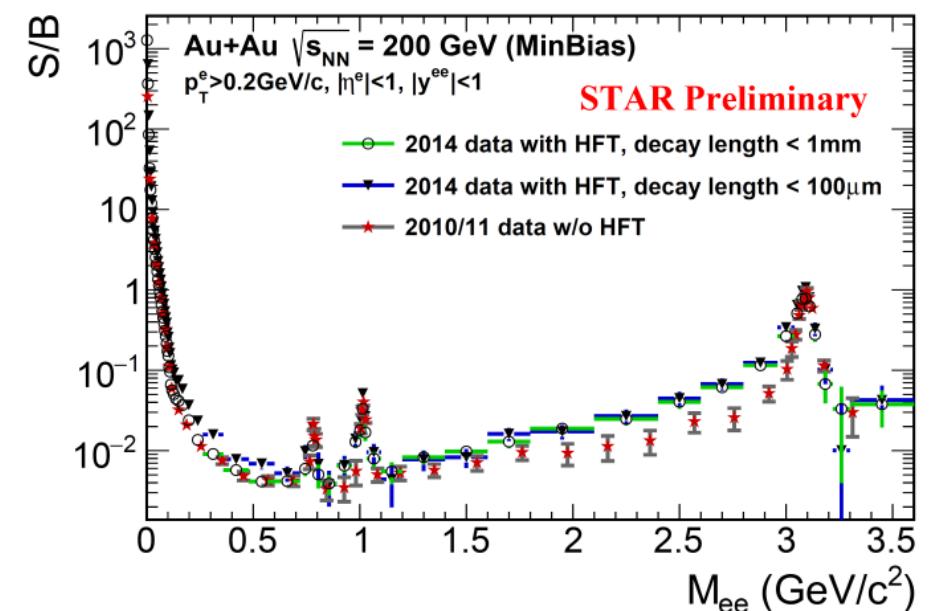
Physics focus:

- Analysis of e^+e^- spectra in Au+Au collisions at $\sqrt{s_{NN}}=200$ GeV with the HFT

→ suppress background contributions from semi-leptonic charm decays via topological cuts



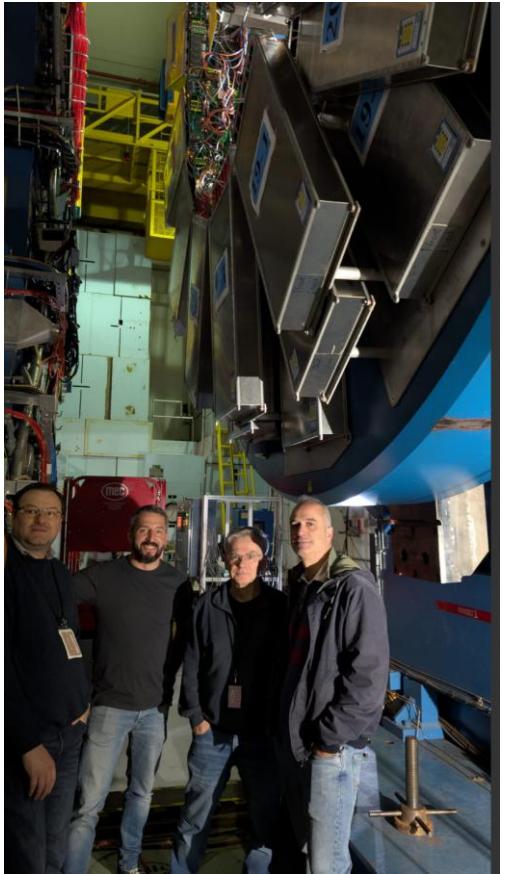
Group members: Tetyana Galatyuk, Szymon Harabasz, Florian Seck, Wenxiong Zhou



Physics Institute, Heidelberg University

eTOF installation, maintenance, operation, calibration (since 2017)

Part of FAIR phase – 0 program



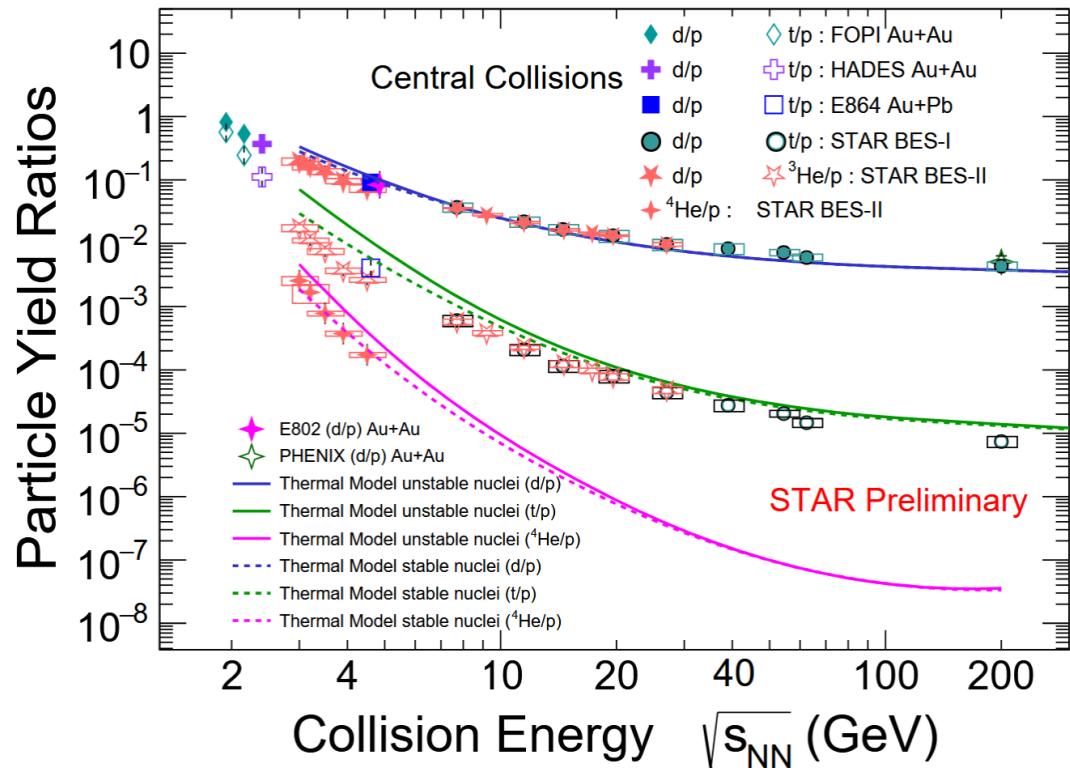
Last round of repairs
completed in Oct. 2025

Group members: Ingo Deppner, David Emschermann, Jochen Fruehauf, Norbert Herrmann, Yue-Hang Leung, Pierre-Alain Loizeau, Esteban Rubio Vallejo, Yannick Soehngen, Philipp Weidenkaff

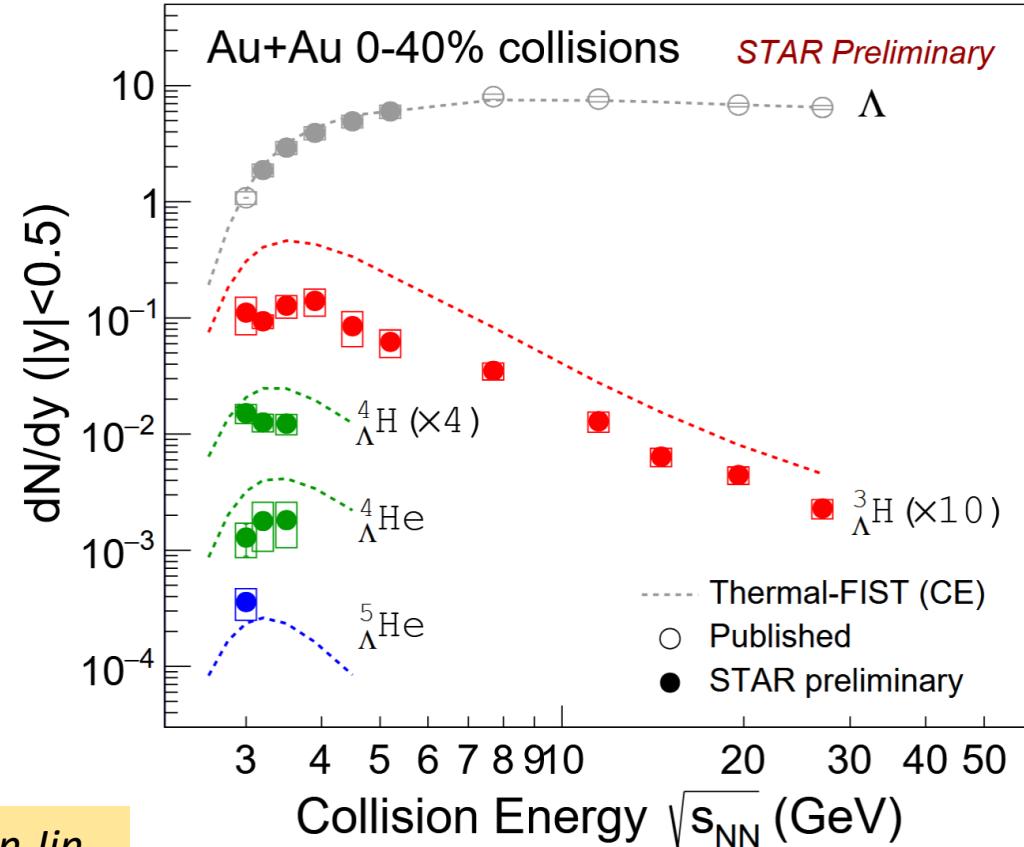
Physics Institute, Heidelberg University

Physics focus: dense baryonic matter properties

Light nuclei production



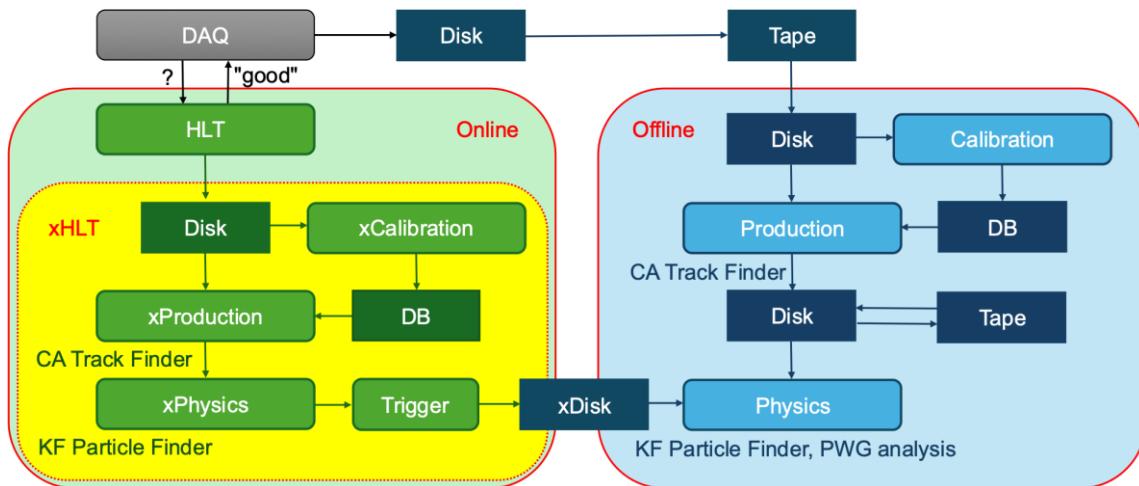
Hypernuclei production



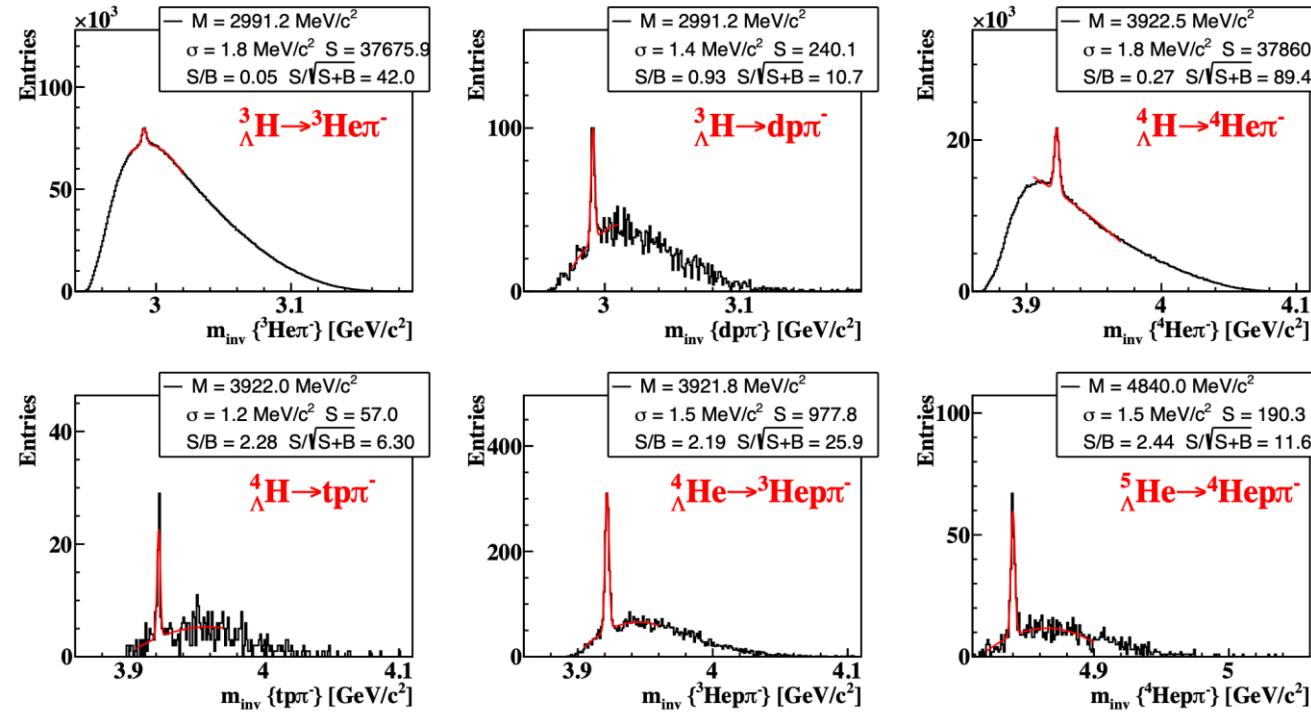
Data analysis: Yue Hang Leung (postdoc), Junyi Han, Yixuan Jin, Hanwen Feng, Yannick Söhngen (PhD students)

Frankfurt Institute for Advanced Studies (FIAS)

FIAS: Express Production FIAS + BNL + Kent State U



Standard (2018) and express reconstruction (2019-21) of hypernuclei using data collected at different energies in the collider and fixed-target modes during Run 18 – Run 21.



The signal of $^5\Lambda\text{He}$ is visible with a significance of 11.6σ

Group members: Artemiy Belousov, Aizat Daribayeva, Ivan Kisel, Robin Lakos, Akhil Mithran, Oddharak Tyagi, Iouri Vassiliev, Maksym Zyzak

Eötvös University, Budapest

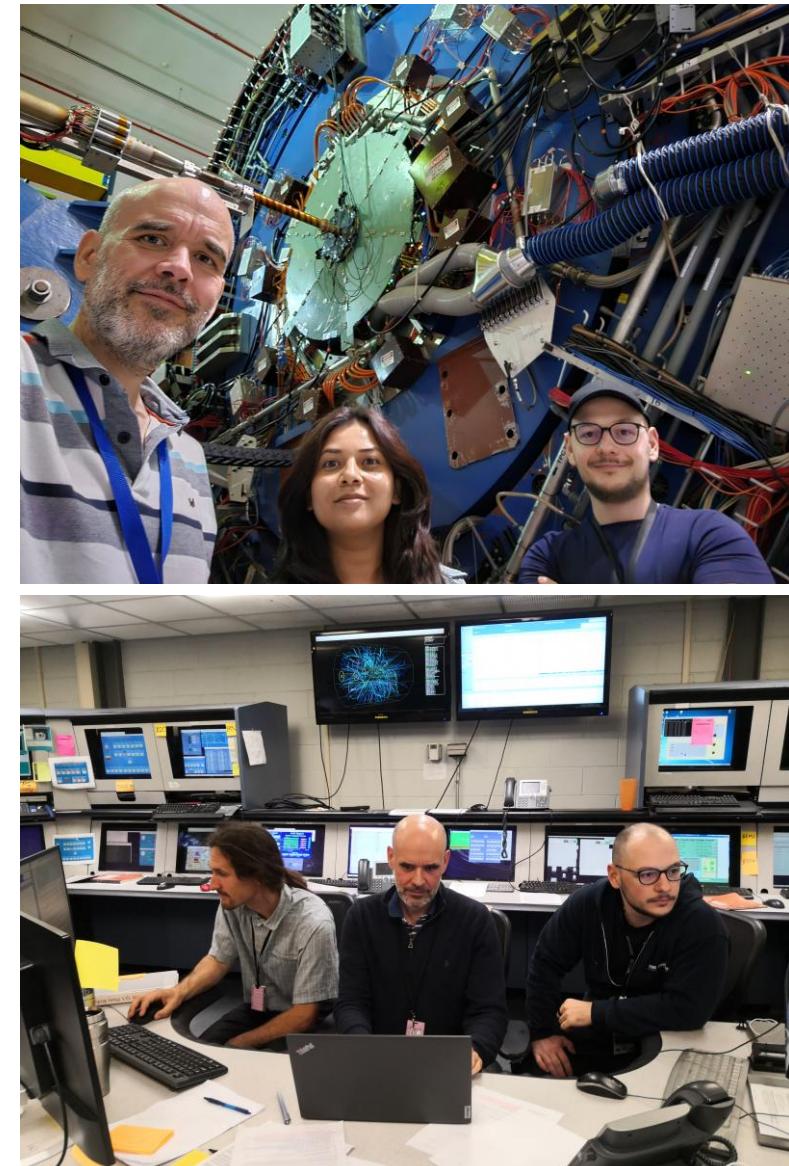
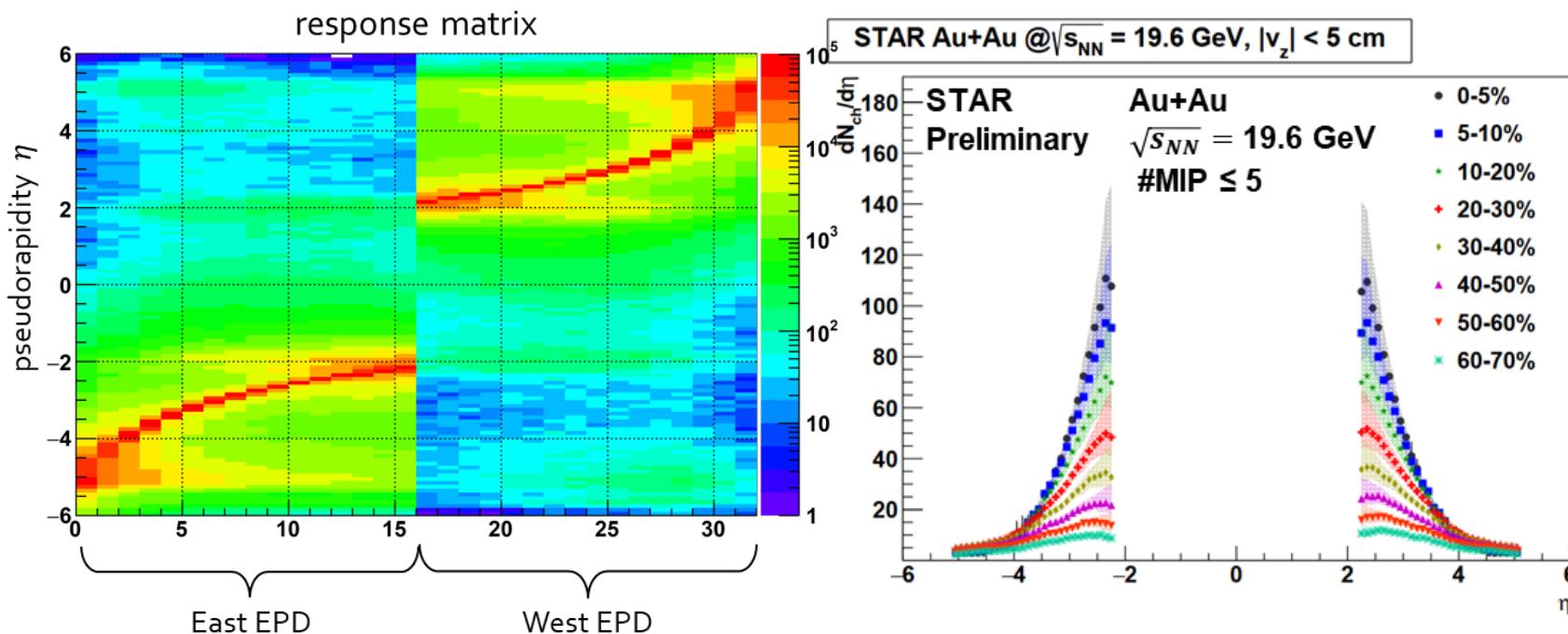
Group members: Máté Csanád, Dániel Kincses, Yan Huang,
Mátyás Molnár, Márton Nagy

- joined in 2018 (two faculty, several postdocs and students over the years)
- participated in the review of >20 GPCs
- 40 shifts, one upcoming in January (M. Nagy)

Physics focus: EPD and femtoscopy

- $dN/d\eta$ measurement with the EPD via unfolding

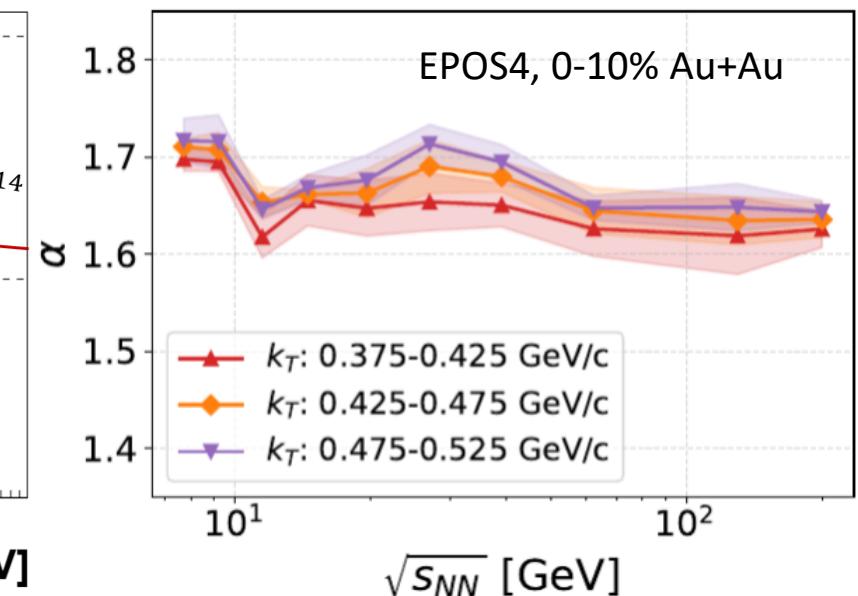
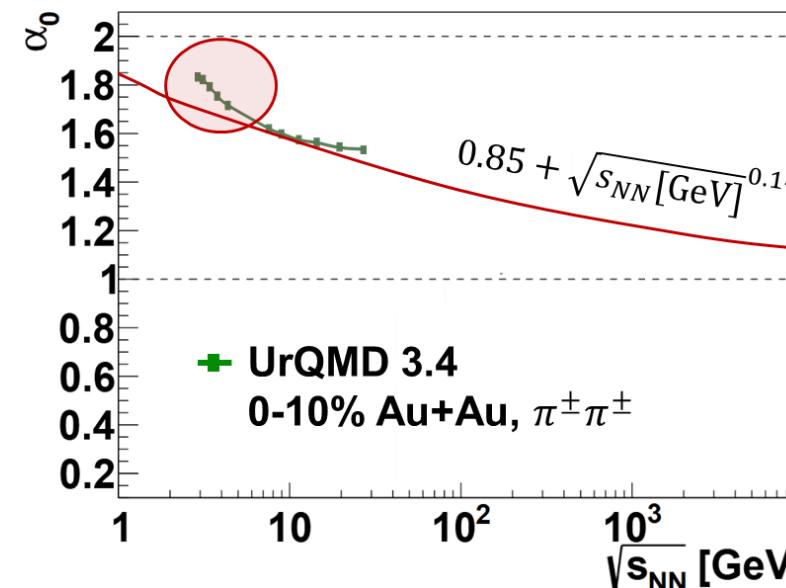
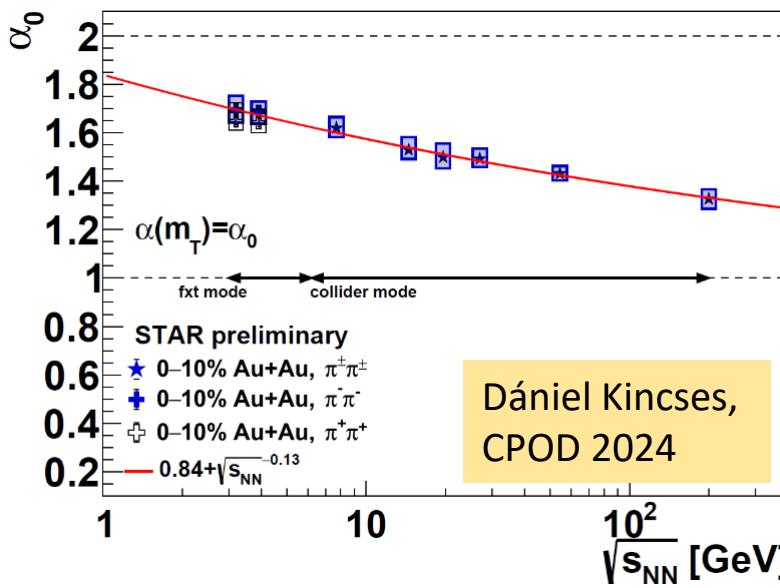
in collaboration with Balázs Kórodi and Mike Lisa (OSU)



Eötvös University, Budapest

Physics focus: Femtoscopy measurements with Lévy sources

- Measured in 1D and 3D, pions and kaons, various energies
- Connection to critical point
- Baseline investigated currently in UrQMD and EPOS



Analyzers: Dániel Kincses, Yan Huang, Mátyás Molnár, Márton Nagy (currently)

Former colleagues on this topic: Srikanta Tripathy, Ayon Mukherjee

Czech Technical University and Nuclear Physics Institute CAS

Zero Degree Calorimeter (since 2017)

Lukáš Kramárik, Jan Vaněk, Tomáš Truhlář, Jakub Češka

- On-site maintenance before and after run
- On-call experts during whole data taking 24/7



Detector Slow Control (since 2018)

Lukáš Holub

- Development and maintenance of SC for iTPC
- Development of slow control for MTD detector
- Development and maintenance of SC for TOF
- Development of SC for forward upgrade (sTGC)



Recent/current Service in STAR:

Deputy Physics Coordinator (Barbara Trzeciak)

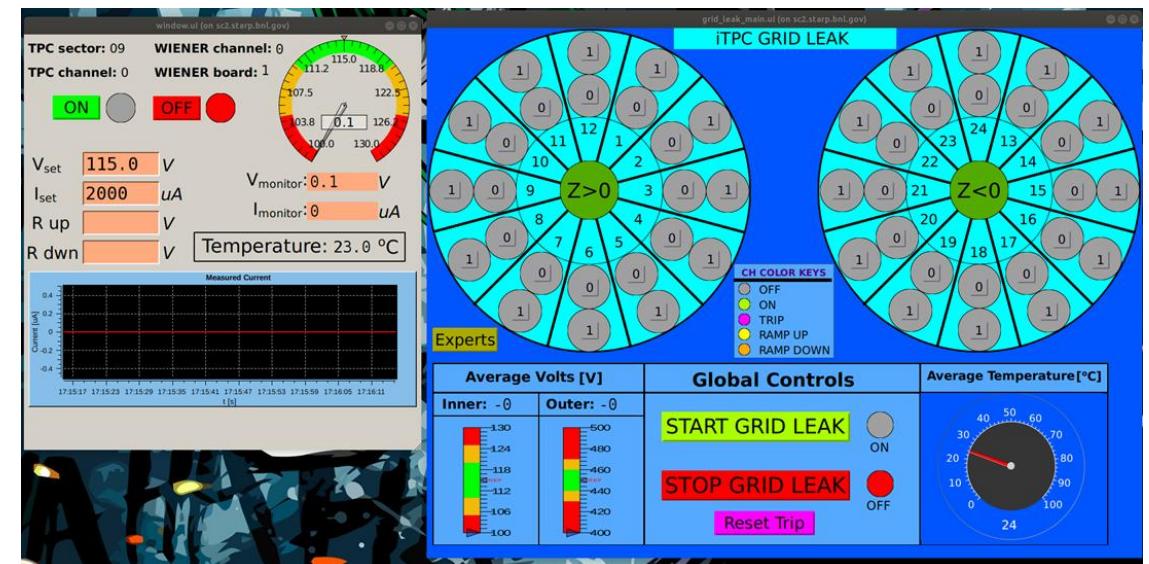
Convenership, Council Chair (Jana Bielčíková)

TPC Tracking Task Force (Petr Chaloupka)

SL and DO during shifts + period coordinator (Jaroslav Adam)

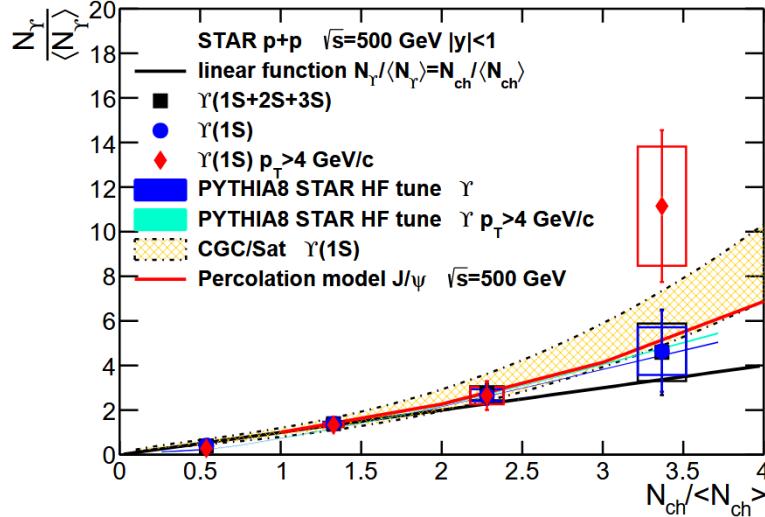
Embedding and Data Q/A for PWG Hard Probes

(Monika Robotková, Jitka Mrázková, Ayanabha Das)



Czech Technical University in Prague

L. Kosarzewski

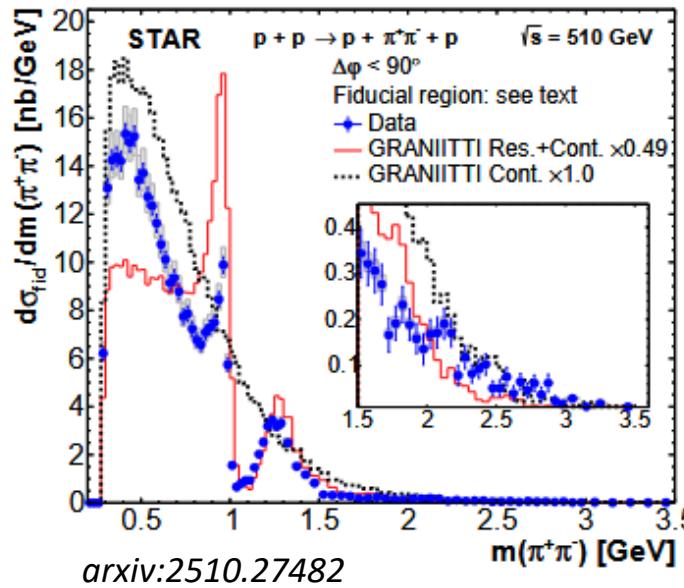


Phys. Rev. D 112 (2025) 032004

Multiplicity dependence of Upsilon production in pp collisions at 500 GeV follows the same trend as J/ψ at RHIC and LHC energies

in collaboration with WUT and UC Davis

T. Truhlář (Phd thesis 2026)



Study of central exclusive production of $\pi^+\pi^-$, K^+K^- and $p\bar{p}$ pairs in pp at $\sqrt{s} = 510$ GeV

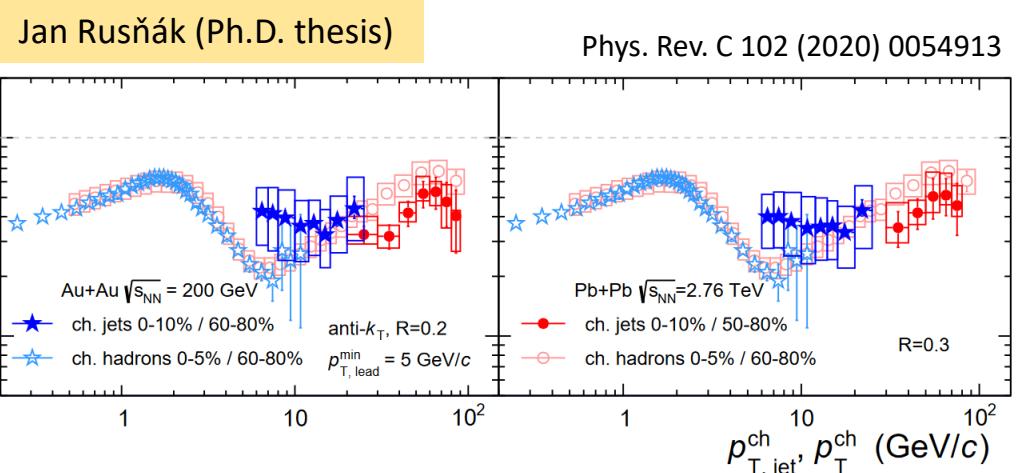
in collaboration with W. Guryan (BNL)

Physics focus: heavy flavor and jet production

- D^0 production in pp collisions
- Modification of angularities in D^0 jets in Au+Au collisions at 200 GeV
- HF electron production in Au+Au collisions at 54 GeV
- Underlying event and spherocity analysis in pp collisions at 510 GeV
- Inclusive jet production in pp and Au+Au collisions at 200 GeV
- Search for diffusion wake in dijet system via rapidity asymmetry in Au+Au collisions at 200 GeV

Group members: *staff*: Jaroslav Adam, Jaroslav Bielčík, Petr Chaloupka, Barbara Trzeciak, *postdocs*: Gabriel Dale-Gau, Oliver Matonoha, Alexandr Prozorov, *PhD students*: Jakub Češka, Ondřej Lomický, Subhadip Pal, Veronika Prozorova, Tomáš Truhlář, *MSc students*: Jakub Macura, Kristýna Šedová, Ondřej Staněk, Michal Vranovský, *Bc students*: Jan Avkovský, Milan Merta

Nuclear Physics Institute, Czech Academy of Sciences



First measurement of inclusive charged-particle jet suppression in Au+Au collisions at 200 GeV

in collaboration with P. Jacobs (LBNL)

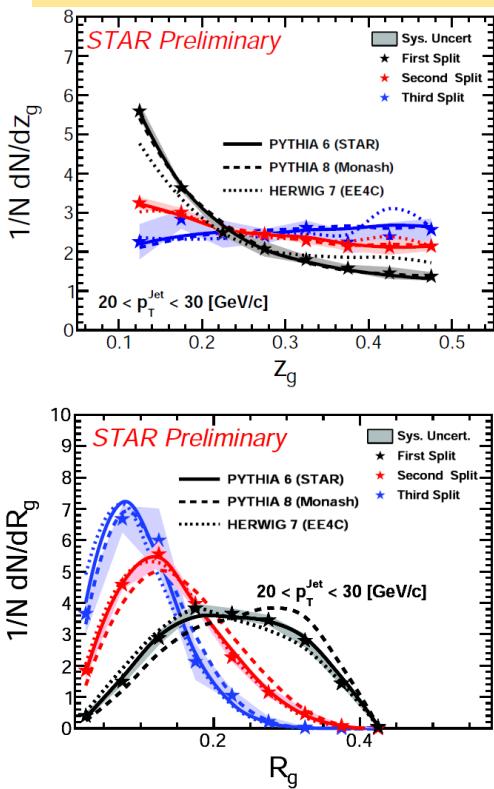


RHIC/AGS Thesis Award

Physics focus: jets and heavy flavor production

- Jet substructure in pp collisions at 200 GeV
- Inclusive full jet production in Au+Au collisions
- Energy-energy correlators in heavy-ion collisions
- J/ψ production in jets in pp collisions at 510 GeV

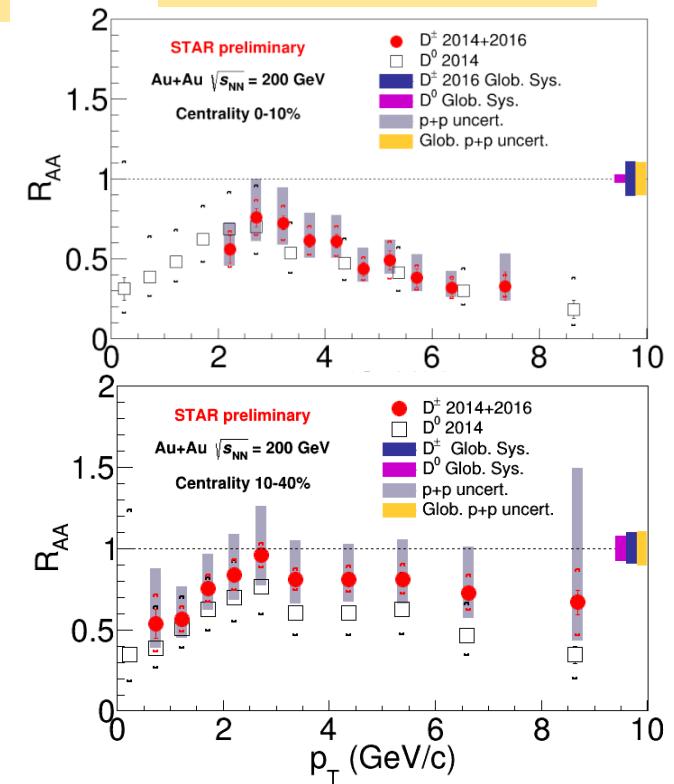
Monika Robotková (Ph.D. thesis)



3D jet substructure in p+p collisions at 200 GeV

in collaboration with WSU, Yale

Jan Vaněk, Ph.D. thesis

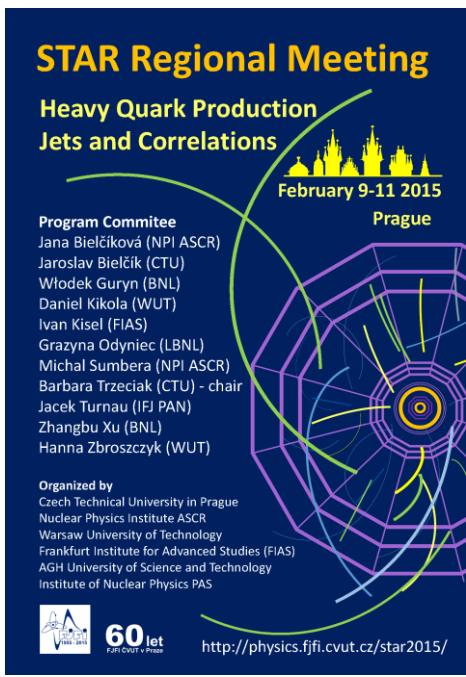
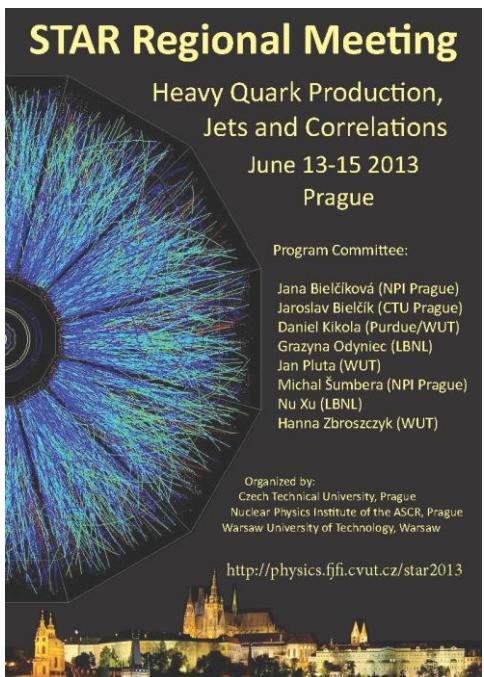


$\text{D}^{+/-}$ meson production in Au+Au collisions at 200 GeV

in collaboration with LBNL, USTC, UCAS

Group members: staff: Jana Bielčíková, Michal Šumbera, postdoc: Vivek Singh, Phd students: Jitka Mrázková, Monika Robotková, Michal Svoboda, MSc students: Vojtěch Poláček, Ondřej Walz

STAR Collaboration and STAR Regional Meetings



A long tradition of organizing
STAR collaboration, regional and
pre-QM meetings

Please join us at the next STAR
regional meeting organized by
ELTE, Hungary in 2026
(date t.b.d.)

Thank you very much for your attention!



baked by Renata Kopečná (a former student at CTU Prague)

The legendary cake from the 2015 STAR Regional Meeting in Prague