

Introduction

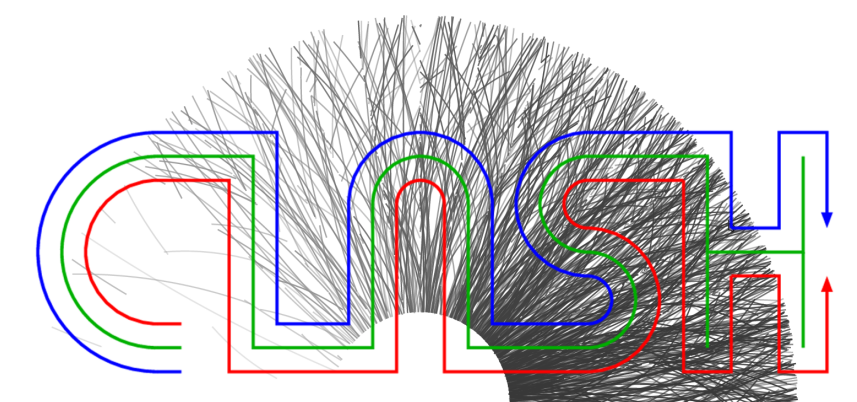
Patrick Kirchgaeßer | 7.10.20

Department of Astronomy and Theoretical Physics - Lund University

CLASH Meeting



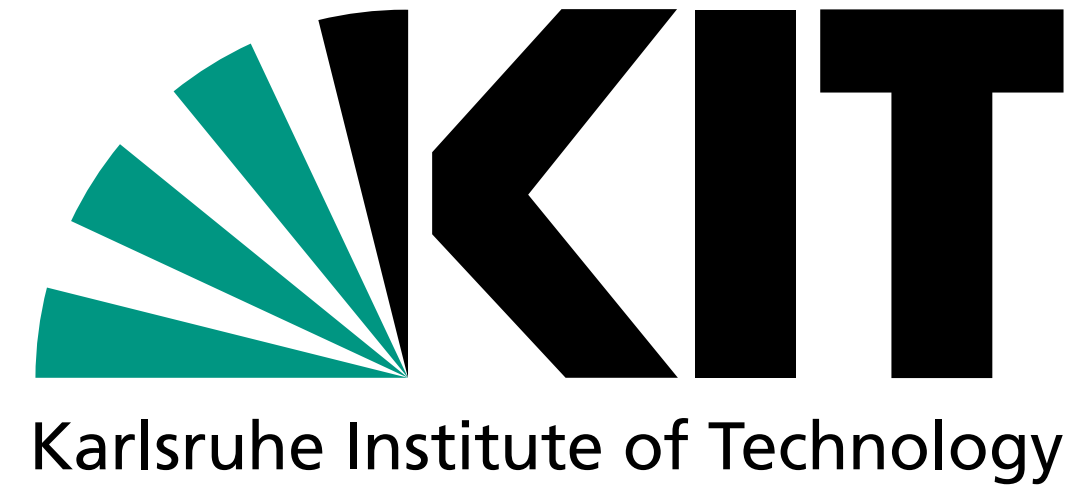
LUNDS
UNIVERSITET



Where I am from



Where I studied



Timeline

BSc.



2014



MSc.



2016



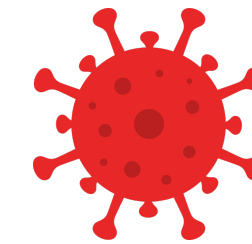
PhD start

Supervisor: Stefan Gieseke

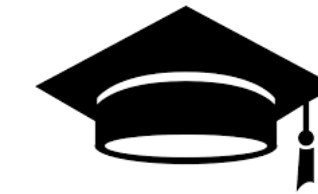
2017



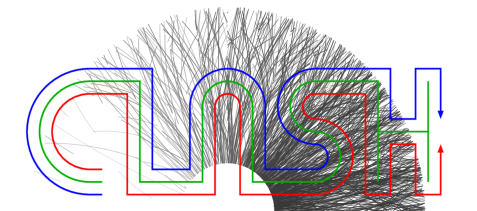
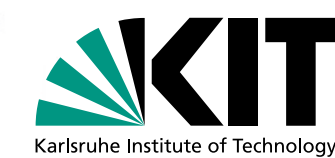
2020



PhD end



Now



Research, mainly focused on small systems

- Non-perturbative QCD:

 - Hadronization

 - Colour reconnection

 - Multiple parton interactions

 - Diffraction

 - Strangeness production mechanisms

- Perturbative aspects:

 - Colour flow evolution

 - VBF/VBS

- Quantification of non-perturbative corrections -> LHC & precision



<https://herwig.hepforge.org>

Current projects I am involved in

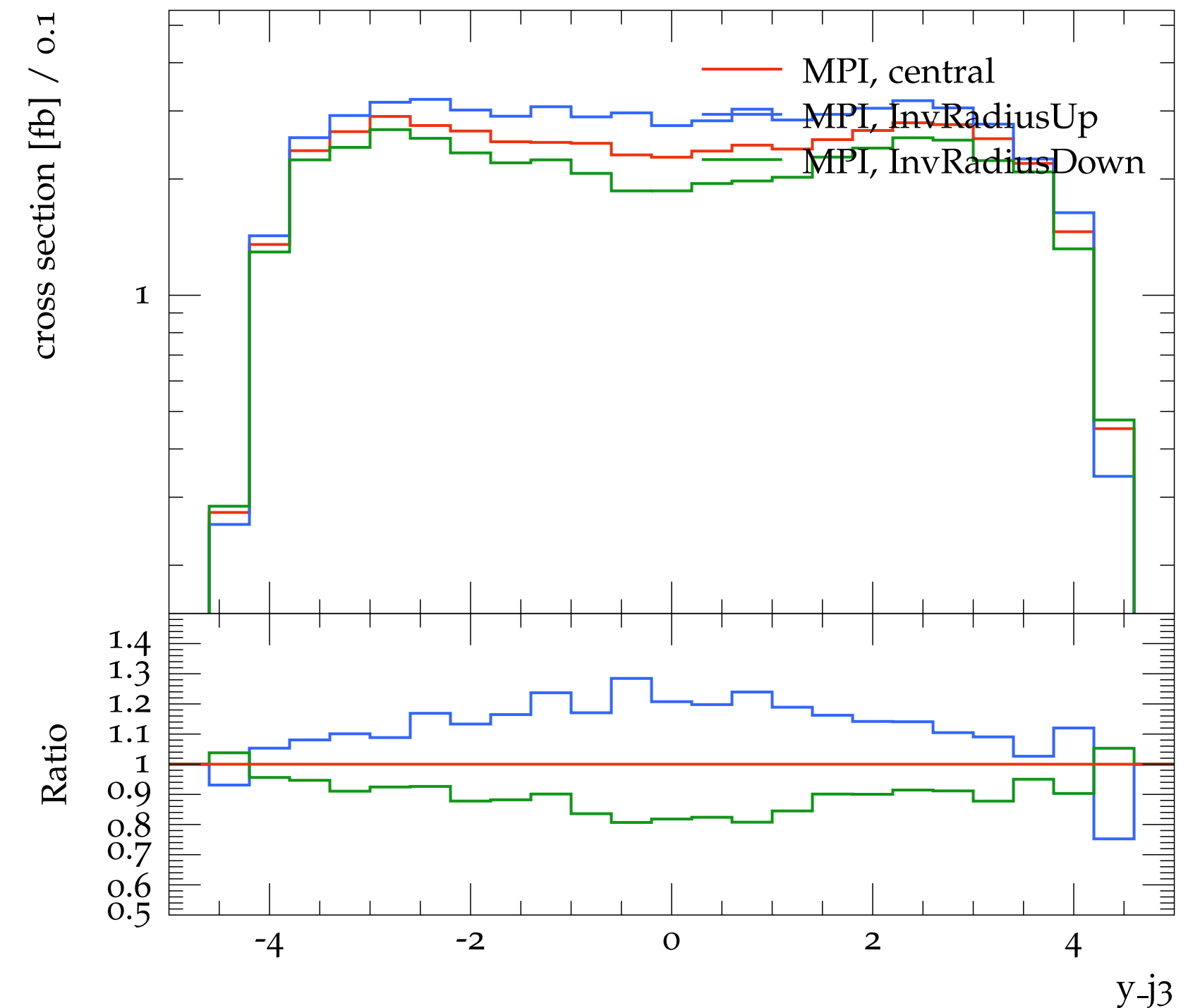
- Quantify non-perturbative corrections in VBF observables
(with Simon Plätzer, Andreas Papaefstathiou, Carsten Bittrich (ATLAS), Stefanie Todt (ATLAS))

- Colour flow evolution in VBF (within CVolver)
(with Simon Plätzer)

- Diffractive cross-sections in Herwig 7
(with Mike Seymour and Stefan Gieseke)

- Development of Herwig 7 

[Herwig 7.2 release note, Bellm et al., Eur.Phys.J.C 80 (2020)]



Rapidity of third jet

Plan to work on (CLASH related)

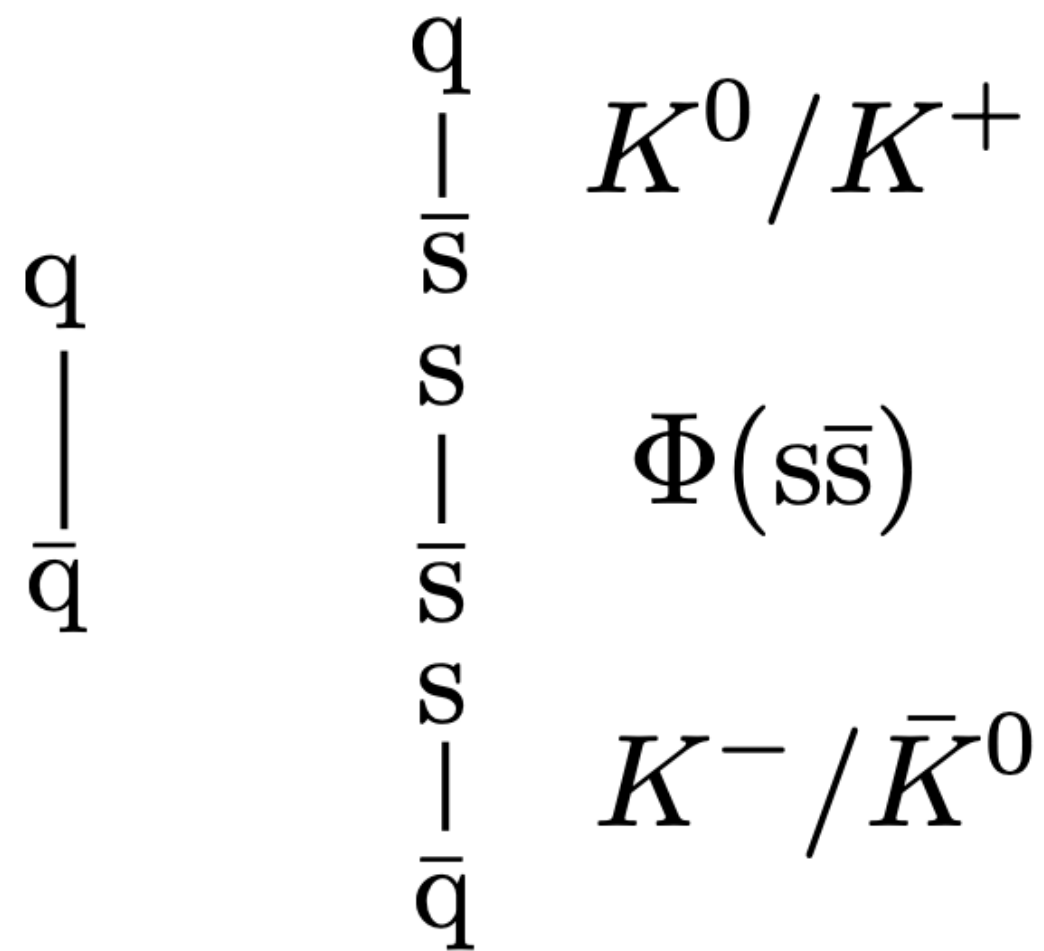
- Comparison between color reconnection and strangeness production models of Herwig and Pythia (with Christian Bierlich)
- Simulation of Heavy Ion Collisions in Herwig (can then CLASH with Angantyr)
- Herwig space-time model and hadronic rescattering (distant future)

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Exploring strangeness enhancement with strings and clusters (with C. Bierlich)

String fragmentation

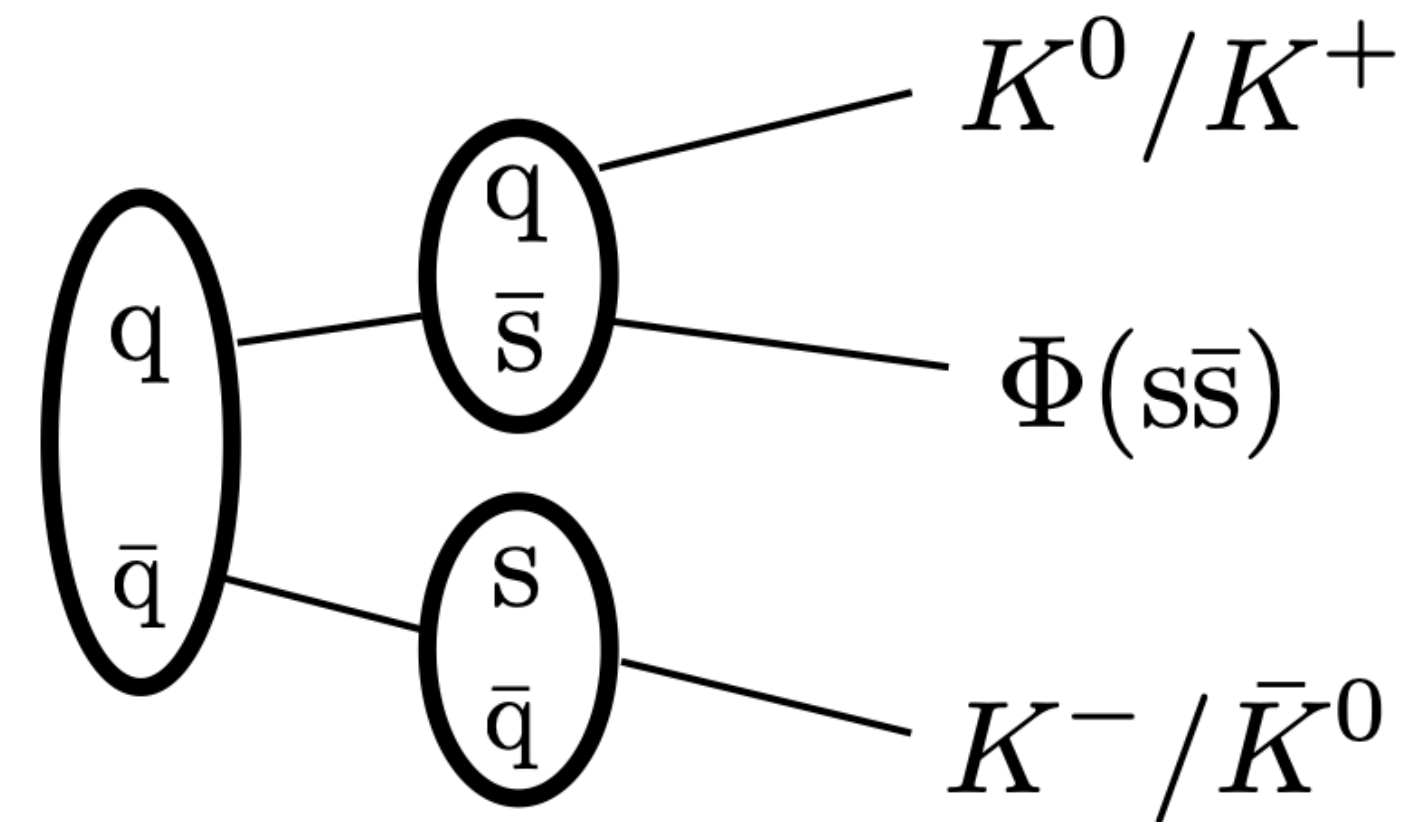


vs.

Clusters

Fission

Decay



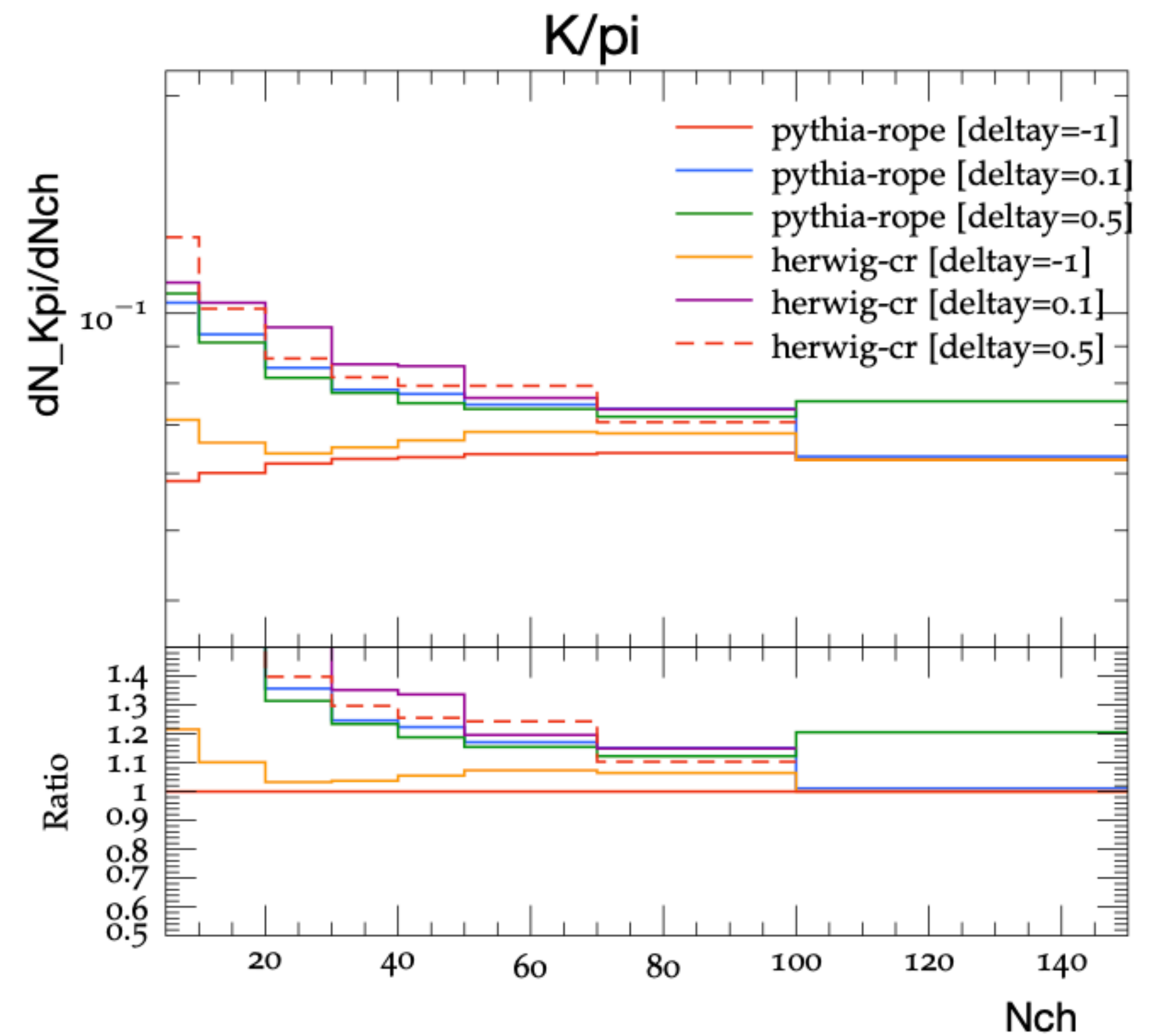
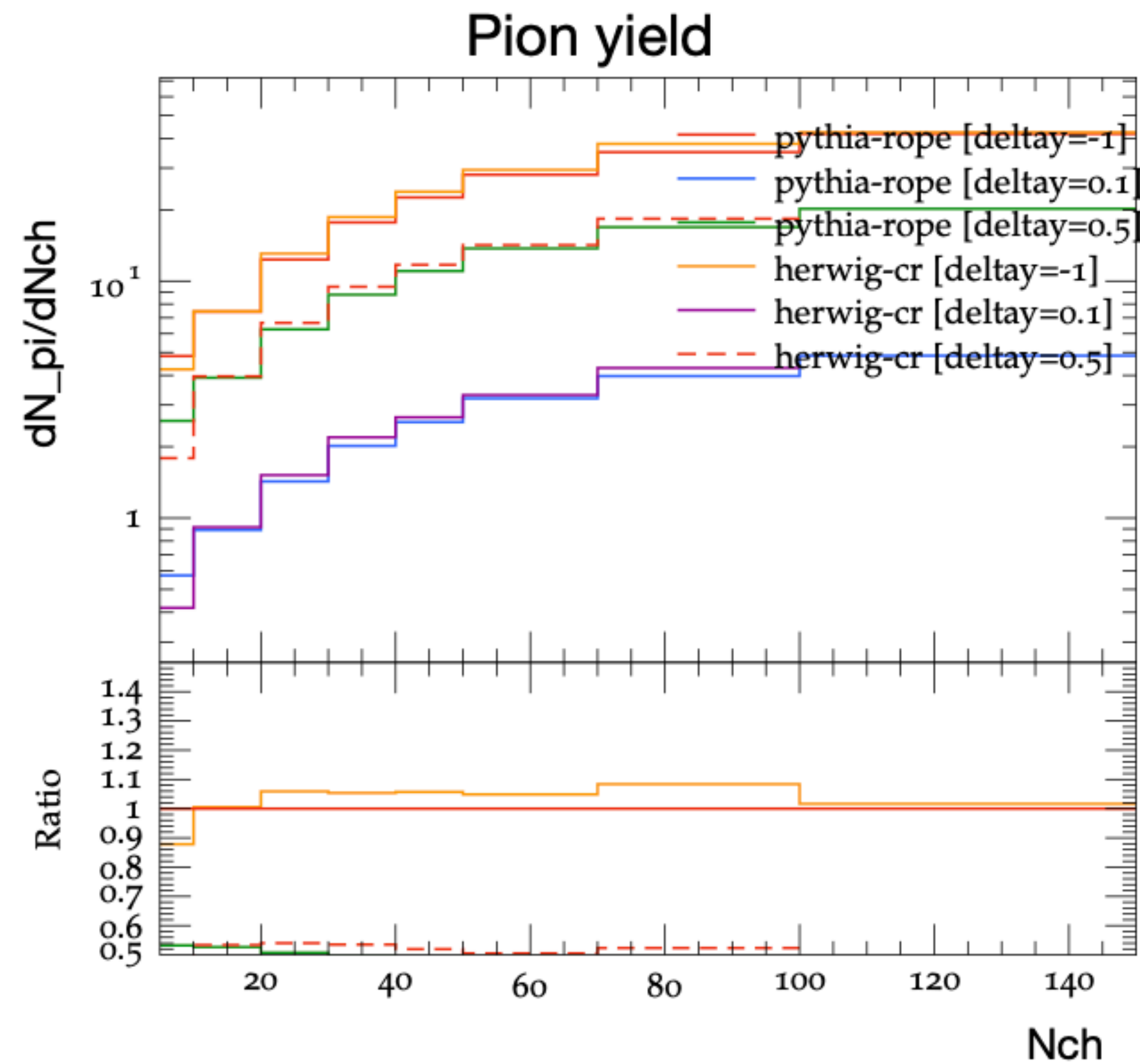
Idea

Two adjacent string breaking necessary to produce $\Phi(s\bar{s})$

Use $\Phi(s\bar{s})$ as trigger particle and study hadron species for different rapidity intervals in bins of centrality

Study correlations between strange hadrons and quantify differences between string and cluster hadronization model

Exploring strangeness enhancement with strings and clusters (with C. Bierlich)



E.g. differences between string and cluster model visible for Kaons

