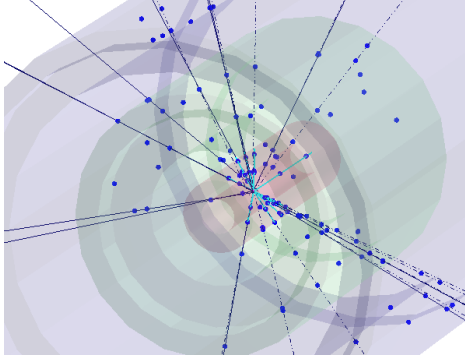


Overview of Minimum-Bias Activities in ALICE and Recent Results

Jan Fiete Grosse-Oetringhaus, CERN
for the ALICE collaboration

LPCC LHC MB & UE Workshop
February 2011

Content

- LHC exps took HI data…
- Nevertheless some recent MB results from ALICE
  - Identified particle spectra
  - Strangeness + resonances
  - Two-Pion Bose-Einstein Correlations
  - Underlying event
  - π^0 production

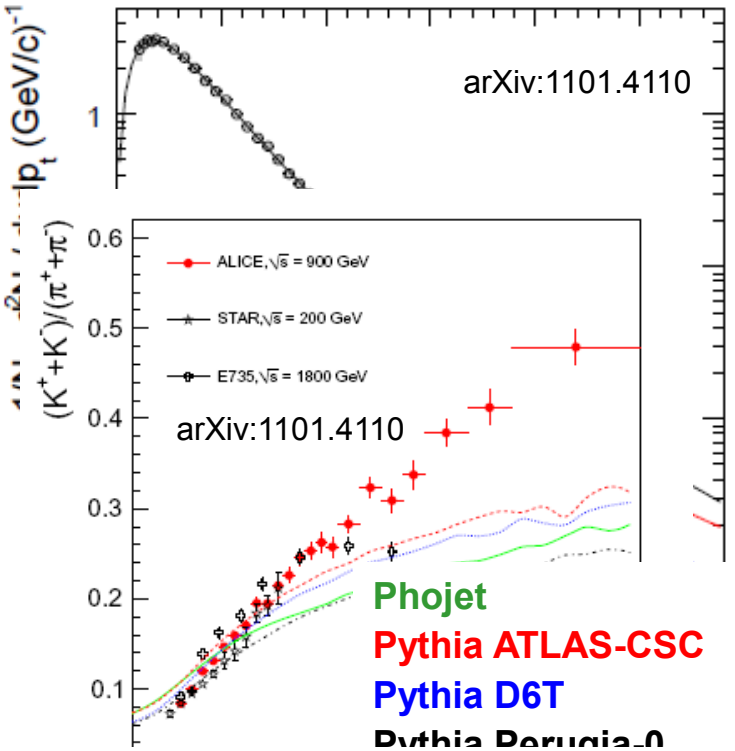
pp publications since the last meeting:
- arXiv:1101.3665 ($\pi\pi$ BE corr)
- arXiv:1101.4110 (id. particles)
- arXiv:1012.3257 (strangeness)

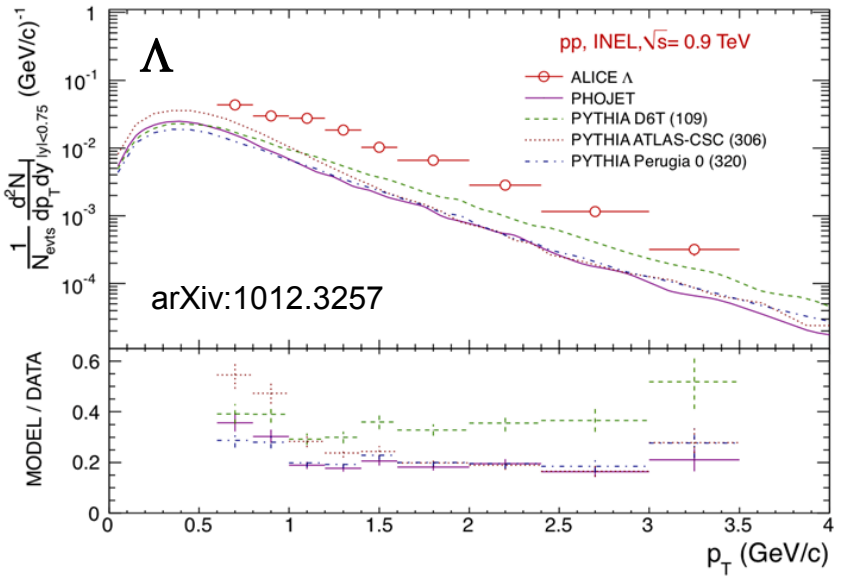
HI publications (not discussed today):
- PRL105, 252301 ($dN_{ch}/d\eta$)
- PRL105, 252302 (elliptic flow)
- PLB696:30 (R_{AA})
- PLB696:328 ($\pi\pi$ BE corr)
- arXiv:1012.1657 ($dN_{ch}/d\eta$ vs. centrality)

MC generator versions used:
D6T/Atlas: Pythia 6.4.14
Perugia-0: Pythia 6.4.21
Phojet 1.12 with Pythia 6.2.14

Identified Particles

- Measurement of $\pi^{\pm}$, $K^{\pm}$, p, p(bar) at 900 GeV (arXiv:1101.4110)
  - $0.1 < p_T < 2.5$ GeV/c
  - Combining specific energy loss and time of flight information as well as kink topologies
- Strange particle production at 900 GeV (arXiv:1012.3257)
  - K_S^0, ϕ, Λ, Ξ
  - Yields, ratios and p_T spectra
  - Model comparisons



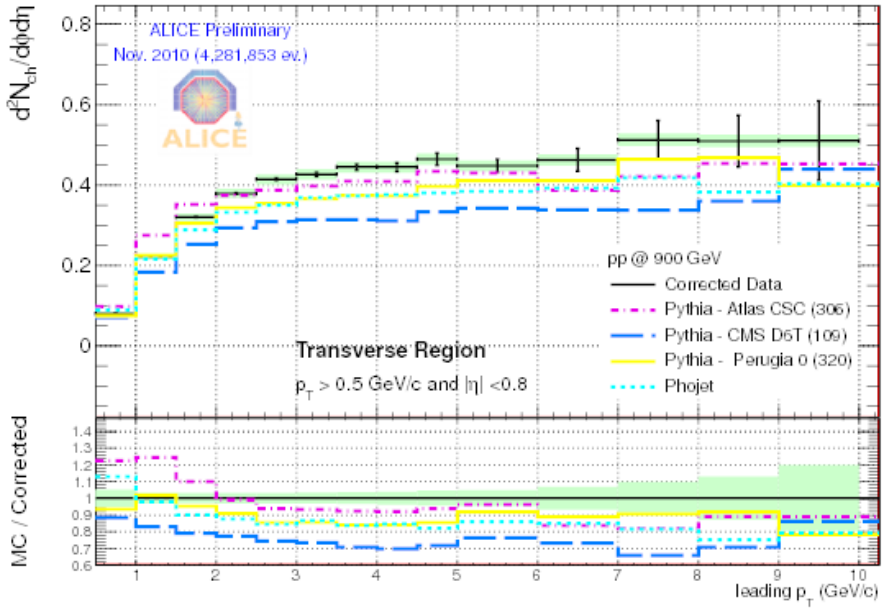


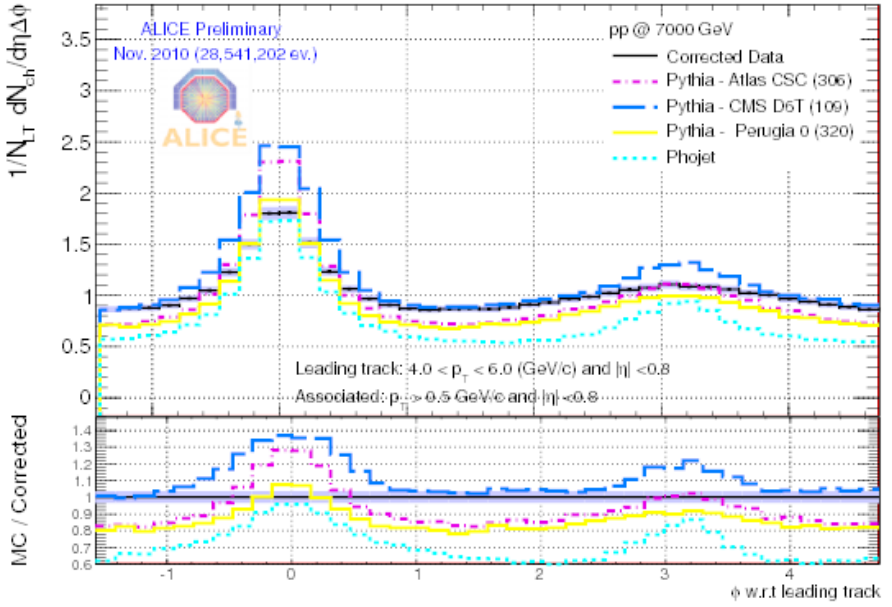
See talk by Lee Barnby

Underlying Event

- N_{ch} and Σp_T as function of leading track p_T
  - In towards, away and transverse region
  - For p_T > 0.15, 0.5 and 1
  - 900 GeV and 7 TeV
  - Includes the common plot definitions
- $\Delta\phi$ distribution w.r.t the leading track in $p_{T,lead}$ bins
- Plans
  - Additional distributions: standard deviations of N_{ch} and Σp_T as well as $\langle p_T \rangle$
  - Lower associated p_T (0.15 GeV)

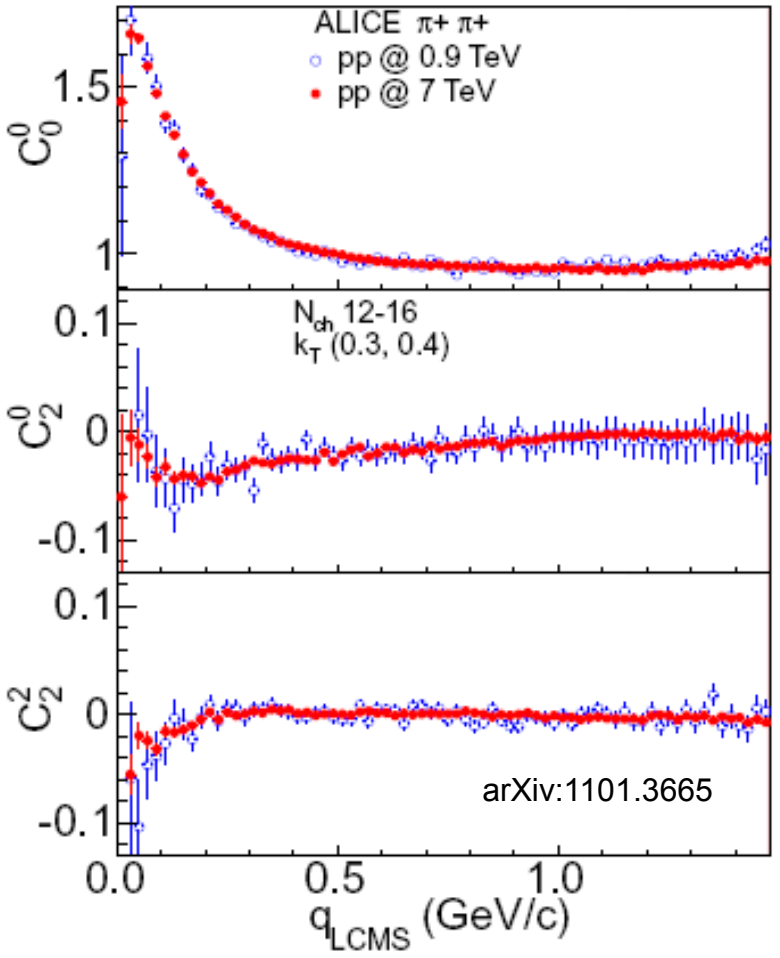
See talk by Sara Vallero





Two-Pion Bose-Einstein Correlations (arXiv:1101.3665)

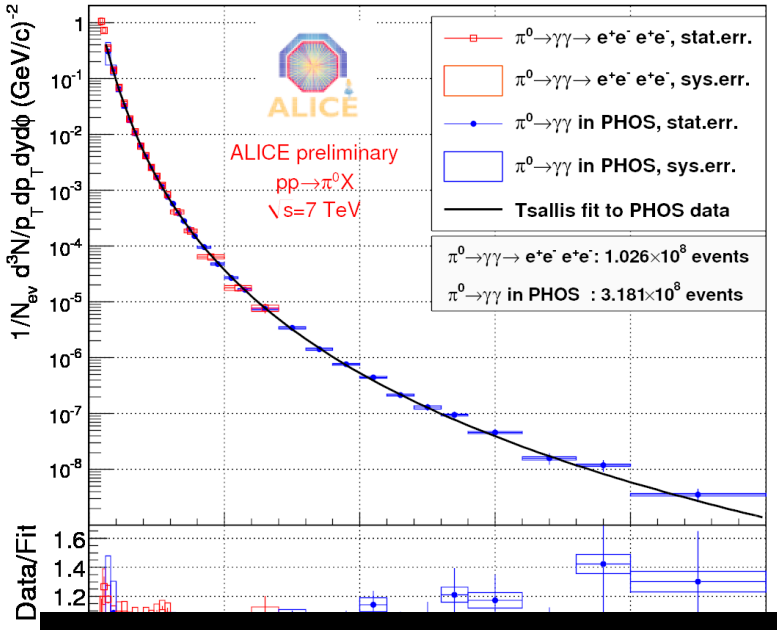
- Measure Bose-Einstein enhancement of identical-pion pairs to assess size of the emitting source
  - At small momentum differences $q = p_2 - p_1$ as function of multiplicity and pair momentum $k_T = |p_{T,1}+p_{T,2}|/2$
- Source sizes are extracted in 3d
- Radii grow with multiplicity
- At high multiplicity, the k_T dependence resembles qualitatively behavior found in HI collisions → collectivity in high-multiplicity pp collisions?
- Similar correlation functions in same multiplicity and k_T momentum bin at 0.9 and 7 TeV → independent of √s

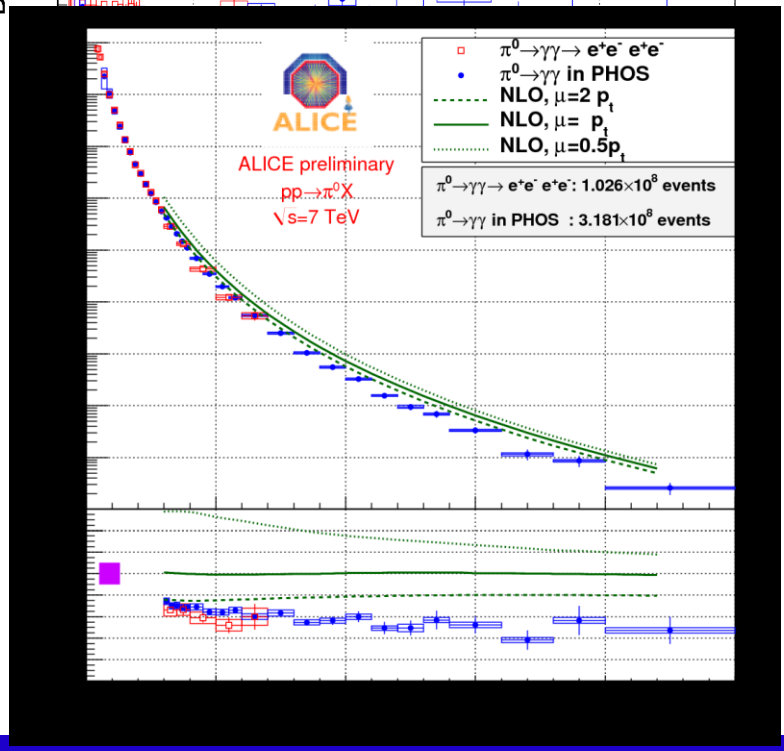


CERN PH Seminar on February 15th

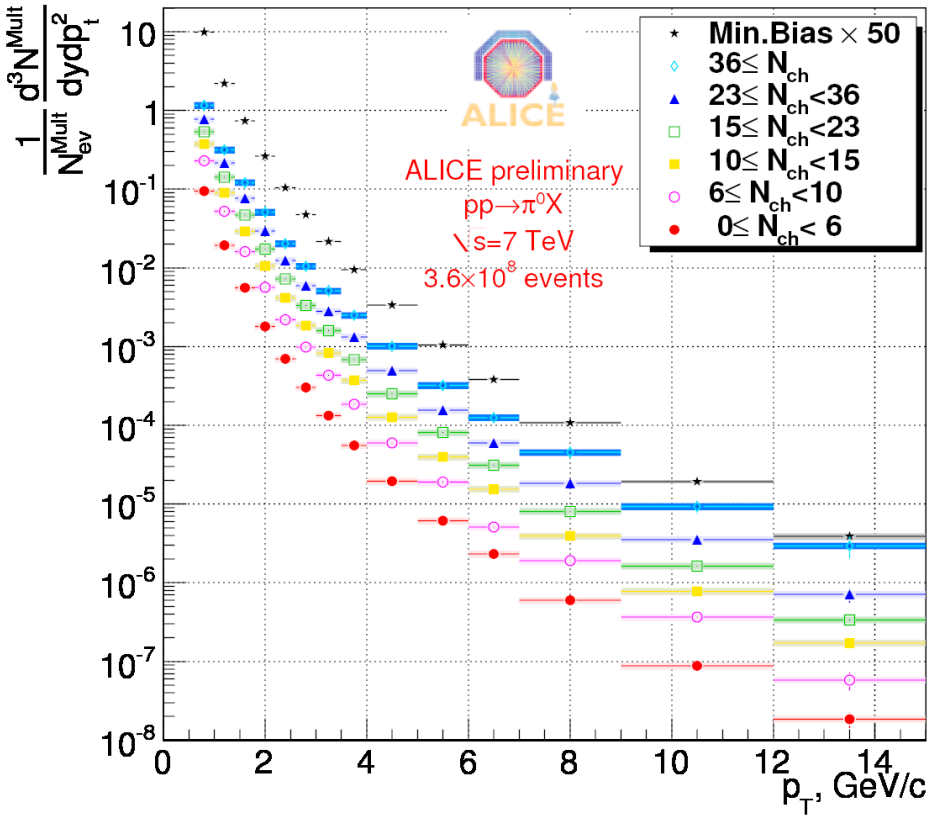
π^0 Production

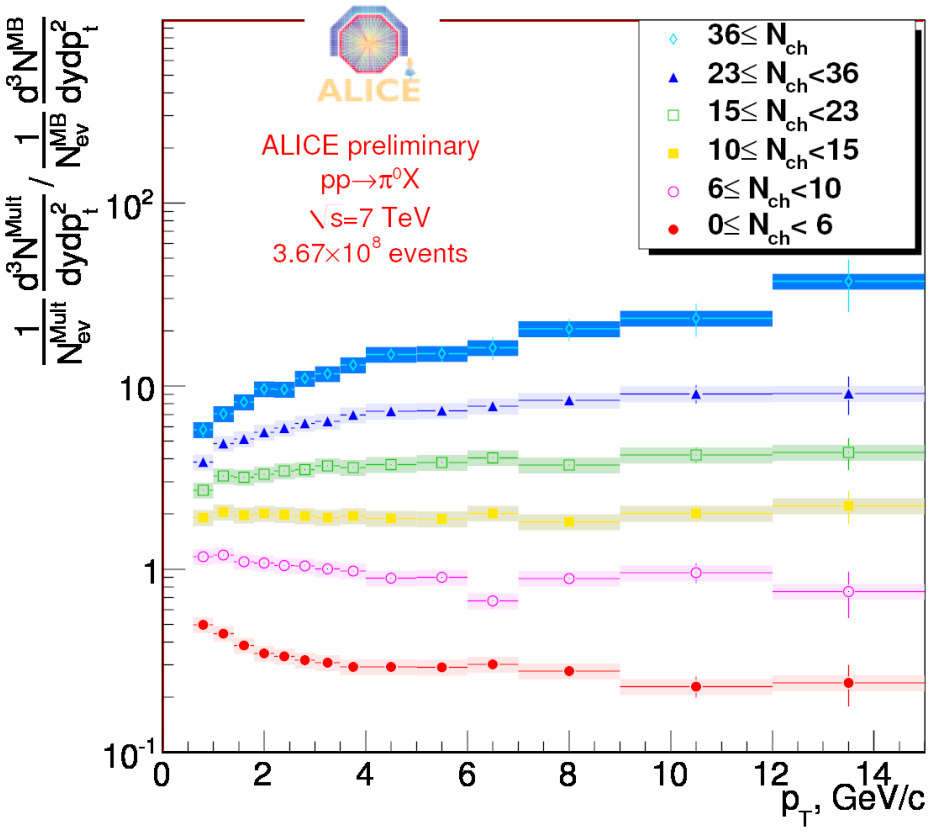
- Consistent measurement with calorimeter and conversions
- Invariant normalized π^0 yield fitted by Tsallis parameterization
- Cross-section compared to NLO pQCD
  - Main uncertainty is the pp cross section





π^0 vs. Multiplicity

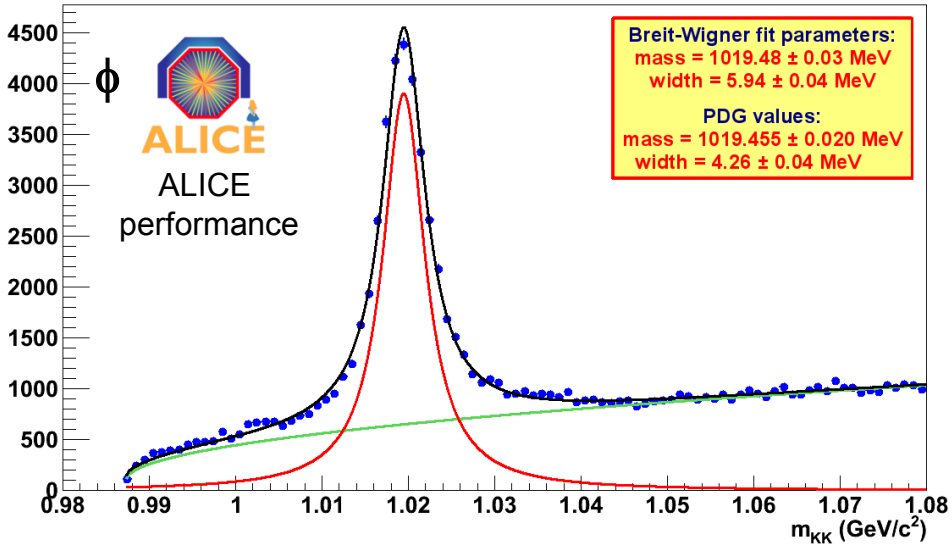


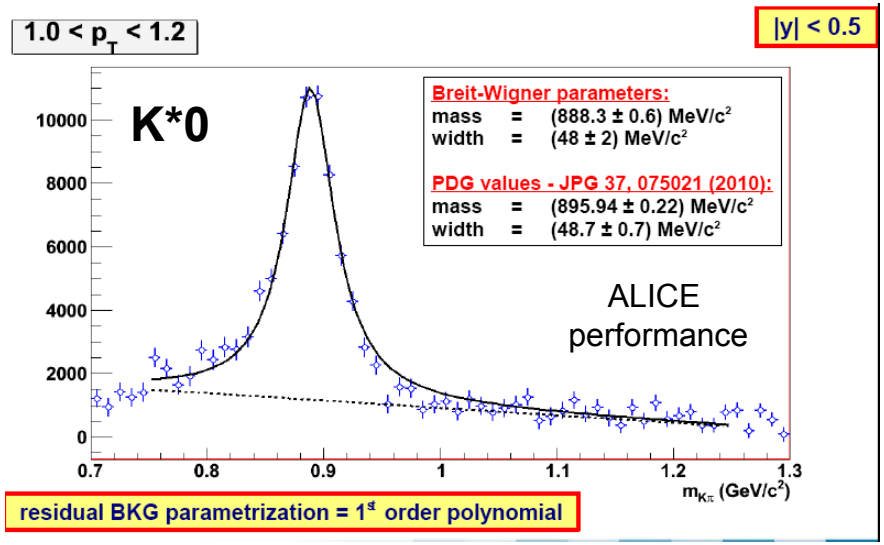


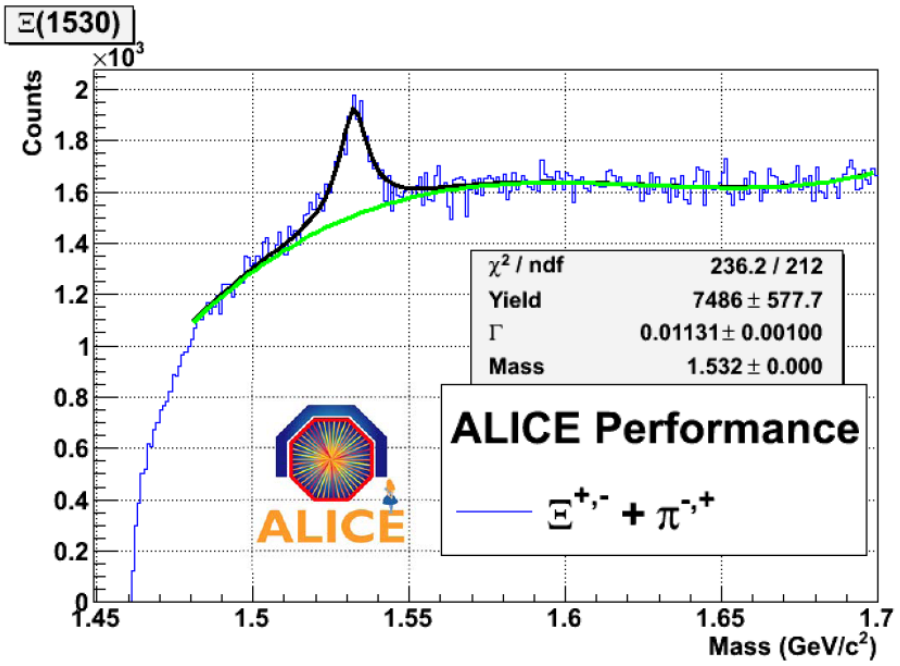
→ Spectra become harder (up to 4-5 GeV) with multiplicity
→ Independent of multiplicity above 6 GeV

Strange Resonances

- $K^*(892)^0$, $\varphi(1020)$, $\Sigma(1385)^{\pm}$, $\Xi(1530)^0$
- Yields, ratios, multiplicity dependence







Summary MB & UE Results

	Other Normalization		*Common Plot* Normalization	
	0.9 TeV	7 TeV	0.9 TeV	7 TeV
MB1 $dN_{ch}/d\eta$	INEL/NSD/INEL>0 (p_T>0) EPJC 68 (2010) 89 and 345	INEL>0 EPJC 68 (2010) 345	Preliminary (since Sep 10) Public note in preparation	Preliminary in preparation
MB2 dN_{ch}/dp_T	INEL/NSD arXiv:1007.0719	Publication in preparation	In progress	
MB3 multiplicity	INEL/NSD/INEL>0 (p_T>0) EPJC Vol. 68 (2010) 89 and 345	INEL>0 EPJC 68 (2010) 345	In progress	
MB4 $\langle p_T \rangle$ vs. N_{ch}	INEL (p_T>0.15) PLB693:53 (2010)		In progress	
UE N_{ch},$\langle P_{T,sum} \rangle$			Preliminary (since Dec 10) Public note in preparation	

Summary

- New published results on Two-pion Bose-Einstein correlations (at 7 TeV), charged hadron production (at 900 GeV) and strangeness production (at 900 GeV)
- Preliminary results on underlying event and π^0 production
- Charged hadron and strangeness producti (including further resonances) at 7 TeV in progress

ALICE is a happy girl right now…