

Orlando and Bari

- trigger for pp and HI exps @ SPS (1980-2001)
 - ✓ from WA76 to NA57
- ALICE strangeness enhanc. paper (2012-2014)
 - ✓ first SE measurement @ LHC energies
- SQM conferences
 - ✓ from Birmingham (SQM2013) to Bari (SQM2019)

Domenico Elia
and Orlando's friends in Bari

Orlando's Fest – Birmingham 16.2.2023

Orlando and Vito @ SQM2019 in Bari



*Orlando and Domenico @ CERN
ALICE week June 2022*



Trigger for pp and HI exps @ SPS

Old “Omega times”, pp physics and HI in WA (1980-1996):

- started close collaboration Birmingham & Bari:

(see Andrew's talk)

- ✓ with two absolute main players: **Orlando and Vito Lenti!**

- WA76 (1982-1986) and WA102 (1994-1996):

- ✓ trigger implemented on MBNIM (Multi-Bit-Nuclear-Instrument-Modules) electronics

- ✓ logic used to select a K^+ or a K^- in order to study decays in $(K^\pm K^0 \pi^\pm)$ or $(K^+ K^-)$ of centrally produced mesons

- ✓ decision based on a fast first level, followed by a second level which allowed particle selection by means of online correlations between the different elements of the hodoscopes and Cherenkovs used in the experiment.

- WA91 (1990-1994):

- ✓ trigger, based on simulations, built with NIM and CAMAC electronic modules

Trigger for pp and HI exps @ SPS

Old “Omega times”, pp physics and HI in WA (1980-1996):

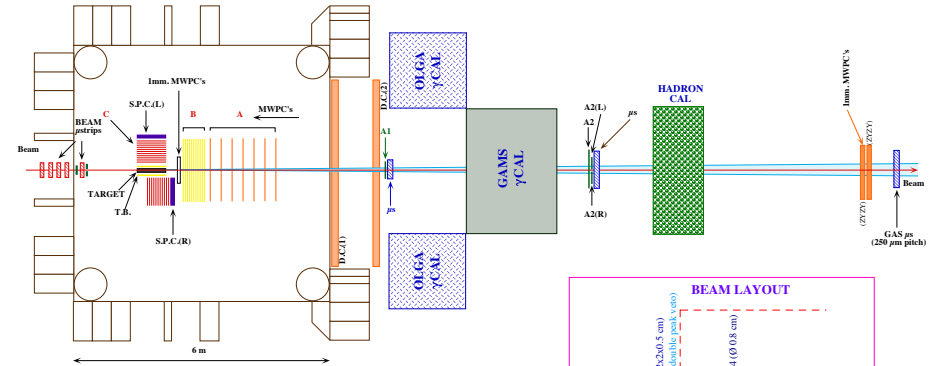
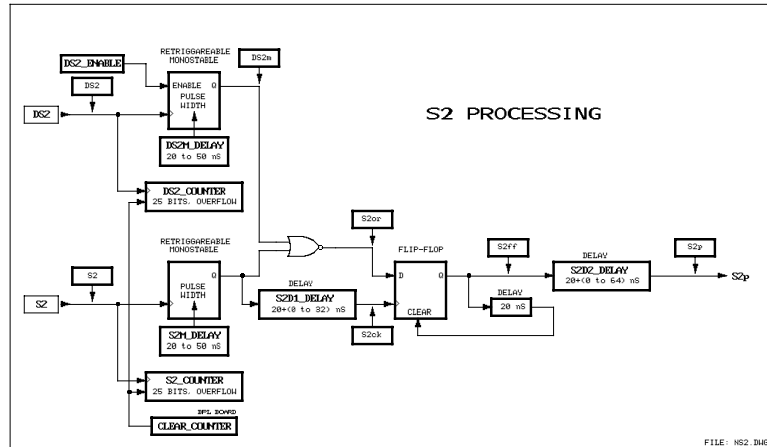
- started close collaboration Birmingham & Bari:

✓ with two absolute main players: **Orlando** and **Vito Lenti!**

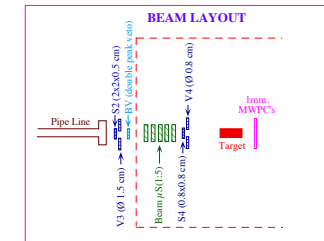
(see Andrew’s talk)

- WA76 and WA102:

Ω LAYOUT FOR WA102 (1995 RUN)



Name	Planes	Pitch	Channels	Dimensions	X Position
BEAM1	2 (ZY)	20 μ m	512	10.24 x 10.24	-3998 / -3988
BEAM2	2 (ZY)	20 μ m	512	10.24 x 10.24	-3942 / -3931
BEAM3	2 (ZY)	20 μ m	512	10.24 x 10.24	-3326 / -3315
BEAM4	2 (ZY)	20 μ m	512	10.24 x 10.24	-2729 / -2718
BEAM5	2 (ZY)	20 μ m	512	10.24 x 10.24	-2686 / -2676
5 m. (A1)	4 (ZYZY)	25 μ m	2048	51.2 x 51.2	5330 / 5355 / 5380 / 5405
10 m. (A2)	4 (ZYZY)	25 μ m	2048	51.2 x 51.2	10462 / 10487 / 10512 / 10537
20 m. (MSDC)	2 (YZ)	250 μ m	368	100 x 100	19501 / 19553



V. Lenti 12/5/1995

Trigger for pp and HI exps @ SPS

Old “Omega times”, pp physics and HI in WA (1980-1996):

- started close collaboration Birmingham & Bari:
 - ✓ with two absolute main players: **Orlando and Vito Lenti!**
- WA76 (1982-1986) and WA102 (1994-1996)
- WA91 (1990-1994)
- WA77 (1982-1987)
 - ✓ complex three levels trigger system using MBNIM logic modules to collect selected events, by means of online measurements of p_T and azimuth of the observed tracks, using online measurements by hodoscopes and MWPC's.
- WA85 (1987-1991), WA94 (1991-1993) and WA97 (1991-1996):
 - ✓ efforts moved to heavy-ion experiments in WA

(see Roman's talk)

Trigger for pp and HI exps @ SPS

Finally moving to NA with HI in 1997:

- **NA57 (1998-2001):**

- ✓ new trigger system, based on VME electronic modules
- ✓ notably, implementation of some new concepts which will be used for the trigger of the ALICE experiment, like the use of parallel triggers and dead times + past-future protections, independent for each detector

(see Roman's talk)

Vito: *“a long and passionate history of working collaboration and, most importantly, a unique friendship lasting since decades!”*

Orlando and Vito at SQM2019 in Bari →



Strangeness enhancement paper

Another chapter of the Orlando's collaboration with Bari:

- SE paper committee (2012-2013):

Multi-strange baryon production at mid-rapidity in Pb-Pb collisions at $\sqrt{s_{NN}} = 2.76$ TeV

View Edit

Submitted by delia on Fri, 01/20/2012 - 12:33

Draft Status: Published

Submission Date: Sun, 09/15/2013 - 12:00

Related Public Paper: [Multi-strange baryon production at mid-rapidity in Pb-Pb collisions at \$\sqrt{s_{NN}} = 2.76\$ TeV](#)

The paper committee was formed by the analysis group (Bari) + Orlando

Orlando kindly accepted to join that PC knowing very well all the details of such studies and, of course, the “glorious story” of the strangeness measurements at the SPS

▼ Submission Form

ID number: 124

e-group: [alice-paperdraft-id124](#)

PWG: PWG-LF (Light Flavour Spectra)

Format: Letter

Paper Committee members: Domenico Elia (domenico.elia@cern.ch)
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Orlando Villalobos Baillie (Orlando.Villalobos.Baillie@cern.ch)

▼ IRC sections

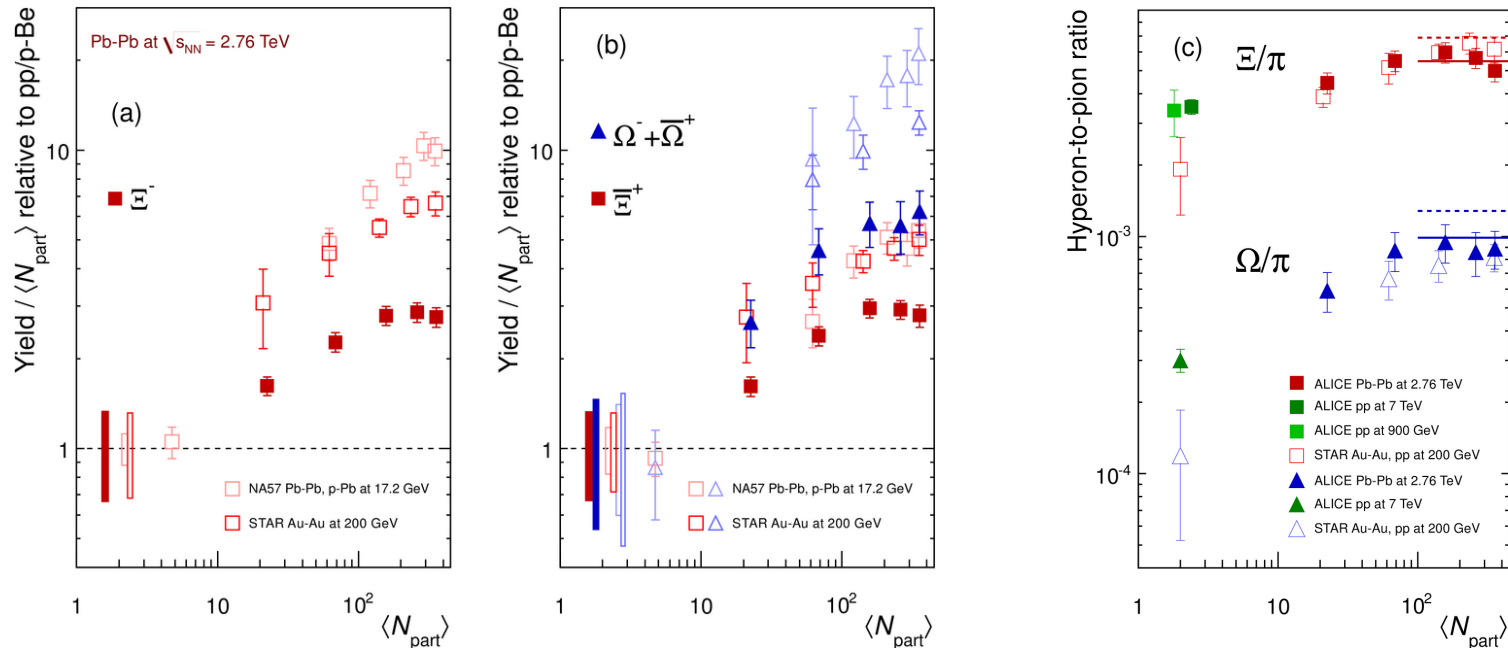
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Strangeness enhancement paper

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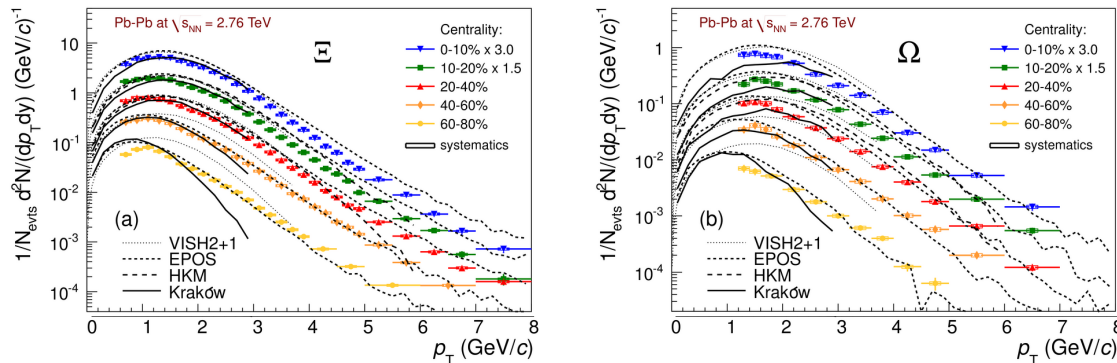
(see Federico's talk)



Strangeness enhancement paper

Another chapter of the Orlando's collaboration with Bari:

- SE paper committee (2012-2013):



Domenico: “Orlando’s role in the paper preparation, in particular for setting the context, describing comparison with models and overall in shaping its physics message, was really key for us!”

[Phys. Lett. B 728 \(2014\) 216-227](#), published: November 2013 →



Multi-strange baryon production at mid-rapidity in Pb-Pb collisions

at $\sqrt{s_{NN}} = 2.76$ TeV^{*}

ALICE Collaboration^{*}

ARTICLE INFO

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ABSTRACT

The production of Ξ^- and Ω^- baryons and their anti-particles in Pb-Pb collisions at $\sqrt{s_{NN}} = 2.76$ TeV has been measured using the ALICE detector. The transverse momentum spectra at mid-rapidity ($|\eta| < 0.5$) for charged Ξ and Ω hyperons have been studied in the range $0.6 < p_T < 8.0$ GeV/c and $1.2 < p_T < 7.0$ GeV/c, respectively, and in several centrality intervals (from the most central 0-10% to the most peripheral 60-80% collisions). These spectra have been compared with the predictions of recent hydrodynamic models. In particular, the Krakow and EPOS models give a satisfactory description of the data, with the latter covering a wider p_T range. Mid-rapidity yields, integrated over p_T , have been determined. The hyperon-to-pion ratios are similar to those at RHIC; they rise smoothly with centrality up to $\langle N_{part} \rangle \approx 150$ and saturate thereafter. The enhancements (yields per participant nucleon relative to those in pp collisions) increase both with the strangeness content of the baryon and with centrality, but are less pronounced than at lower energies.

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1. Introduction

The study of strange and multi-strange particle production in relativistic heavy-ion collisions is an important tool to investigate the properties of the strongly interacting system created in the collision. Particle spectra provide information both about the temperature of the system and about collective flow. In particular they reflect conditions at kinetic freeze-out, i.e. the point in the expansion where elastic collisions cease. Collective flow is addressed by hydrodynamic models, and depends on the internal pressure gradients created in the collision. The effects are species-dependent, so new data on multi-strange baryons at LHC energies can bring new constraints to models.

The enhancement of strangeness in heavy-ion collisions was one of the earliest proposed signals for the Quark-Gluon Plasma [1-3]. It rests on the expectation that in a deconfined state the abundances of parton species should quickly reach their equilibrium values, resulting in a higher abundance of strangeness per participant than what is seen in proton-proton interactions. In this picture equilibration takes place quickly owing to the low excitation energies required to produce $q\bar{q}$ pairs. However, it was shown that, at the same entropy-to-baryon ratio, the plasma in equilibrium does not contain more strangeness than an equilibrated hadron gas at the same temperature [4-6]. Strangeness enhance-

ment has indeed been observed by comparing central heavy-ion collisions with p-Be and pp reactions both at the SPS [7-12] and at RHIC [13-15]. Over the past 15 years, it has been found that the hadron yields in central heavy-ion collisions follow the expectation for a grand-canonical ensemble [16], increasingly well as a function of the collision energy, indicative of a system in equilibrium. At the same time it was understood that, for pp collisions, canonical suppression effects are important [17] and account for the overall hyperon enhancement. The progressive removal of these effects also qualitatively describes the increase in strangeness yields with centrality in Pb-Pb, although at RHIC it was noted that canonical suppression could not successfully reproduce all the features of particle production [18,19]. At lower energies a better description of the system size dependencies could be achieved using a core-corona model [20-22]. These pictures can now be re-examined at the much higher LHC energy. The most straightforward expectation would be equilibrium values for the yields of strange particles in central Pb-Pb collisions, combined with reduced canonical suppression in proton-proton collisions. In this Letter, after an introduction to the ALICE detector and a description of the analysis techniques used to identify strange particles via their decay topology, the multi-strange baryon p_T spectra are presented. Spectra in five different centrality intervals are compared with hydrodynamic models and the corresponding mid-rapidity yields are given. Their ratios to the interpolated yields for pp interactions at the same centre-of-mass energy, normalized to the number of participant nucleons, are used to obtain the enhancement plot as used at lower energies. In addition, we study the dependence on centrality of the hyperon-to-pion production ratio at mid-rapidity and compare these results with predictions.

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SQM conferences

Orlando at the first SQM in Italy:

- SQM in Padova, 20-24 July 1998



social excursion to Venice

SQM conferences

Orlando at the first SQM in Italy:

- SQM in Padova, 20-24 July 1998

uhm .. need to learn a lot before doing this in Bari ...

ok, I'm ready to bring SQM to Birmingham!



social excursion to Venice

SQM conferences

Orlando chair of the XIV SQM conference:

- SQM in Birmingham, 22-27 July 2013



SQM conferences

Orlando joined SQM IAC since 2015:

- [SQM 2015 Dubna, Russia](#)
- [SQM 2016 Berkeley, USA](#)
- [SQM 2017 Utrecht, The Netherlands](#)
- [SQM 2019 Bari, Italy](#)
 - ✓ very close collaboration between Orlando and Domenico for SQM2019, since the preparation of the initial (successful) bid in Berkeley

Domenico: *“I have to thank a number of friends and colleagues for that beautiful experience, a quite long list but I feel Orlando is on the top of this list!”*



SQM conferences

Orlando at SQM2019 in Bari:

- SQM in Bari, 10-15 June 2019



Domenico Elia

Orlando's Fest / Birmingham

SQM conferences

Orlando at SQM2019 in Bari:

- SQM in Bari, 10-15 June 2019



Do we know how much longer this will take?



SQM conferences

Orlando at SQM2019 in Bari:

- SQM in Bari, 10-15 June 2019



social excursion to Matera



SQM2019 plenary session

very good, almost lunch time ...



SQM2019 IAC dinner

Best wishes from your friends in Bari

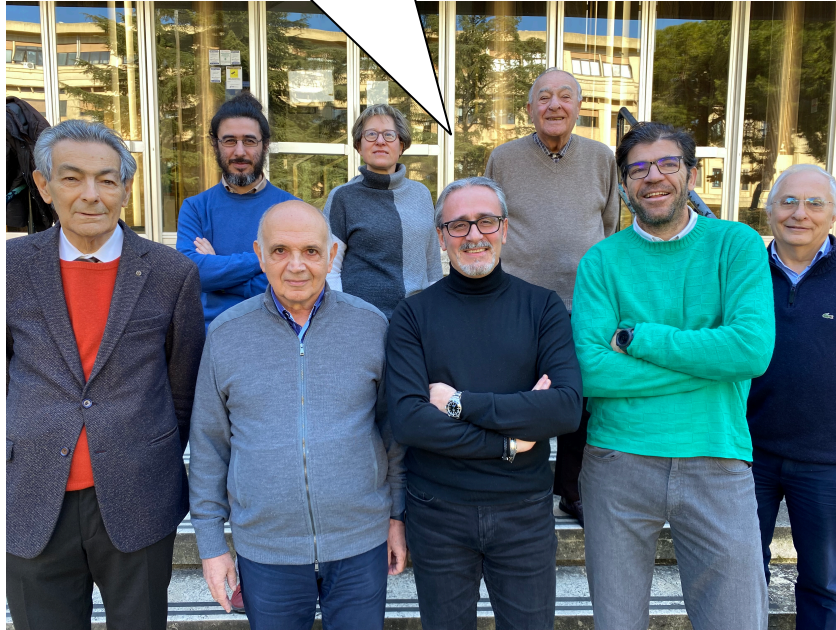
... and never stop traveling through science and life!!!



Best wishes from your friends in Bari

... and never stop traveling through science and life!!!

Thank you, Orlando!



Bari 16.2.2023, left to right: Bruno Ghidini, Domenico Colella, Vito Lenti, Rosanna Fini, Domenico Elia, Alfredo Loconsole, Giuseppe Bruno, Eugenio Nappi