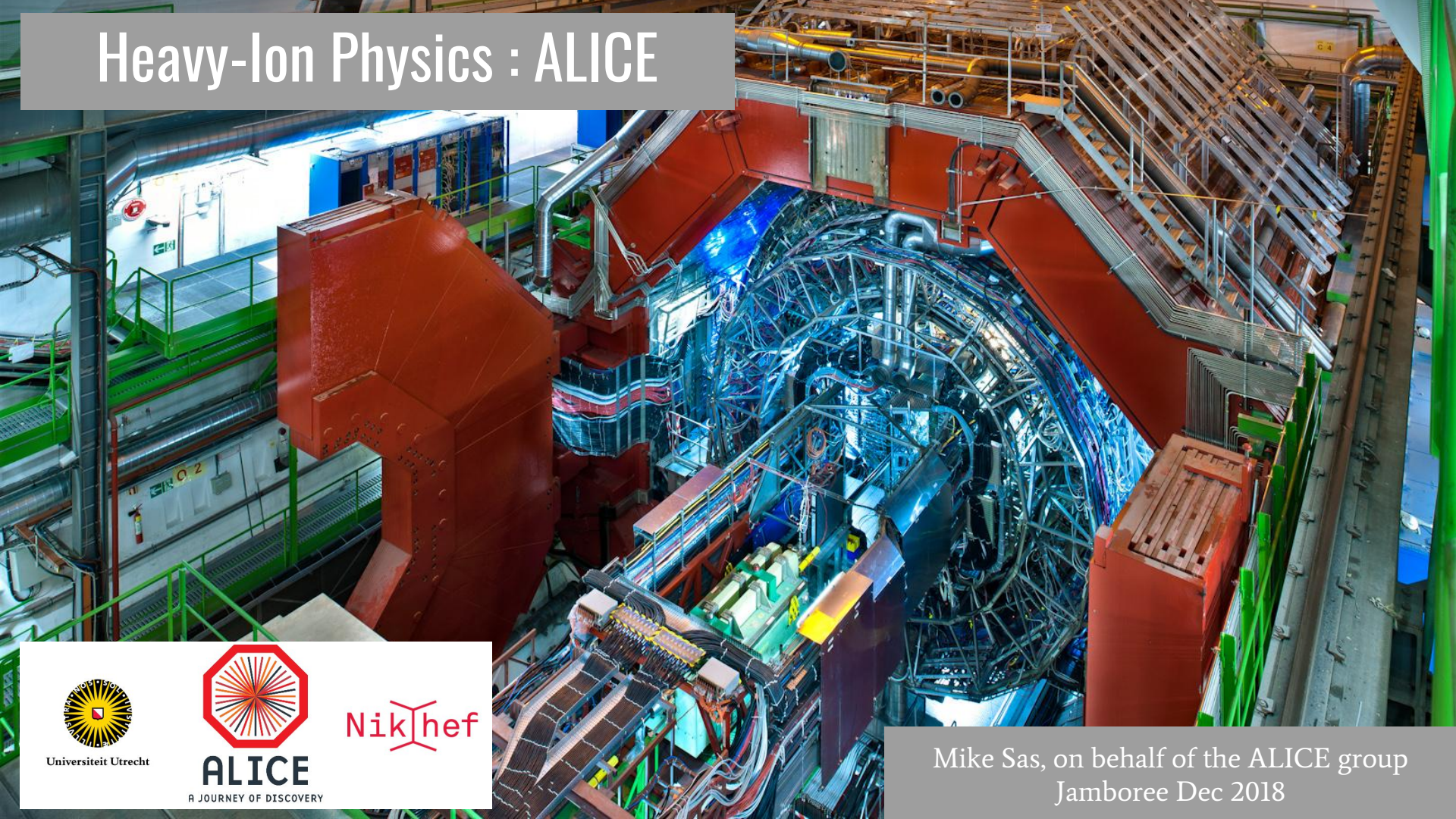


Heavy-Ion Physics : ALICE



Universiteit Utrecht



ALICE

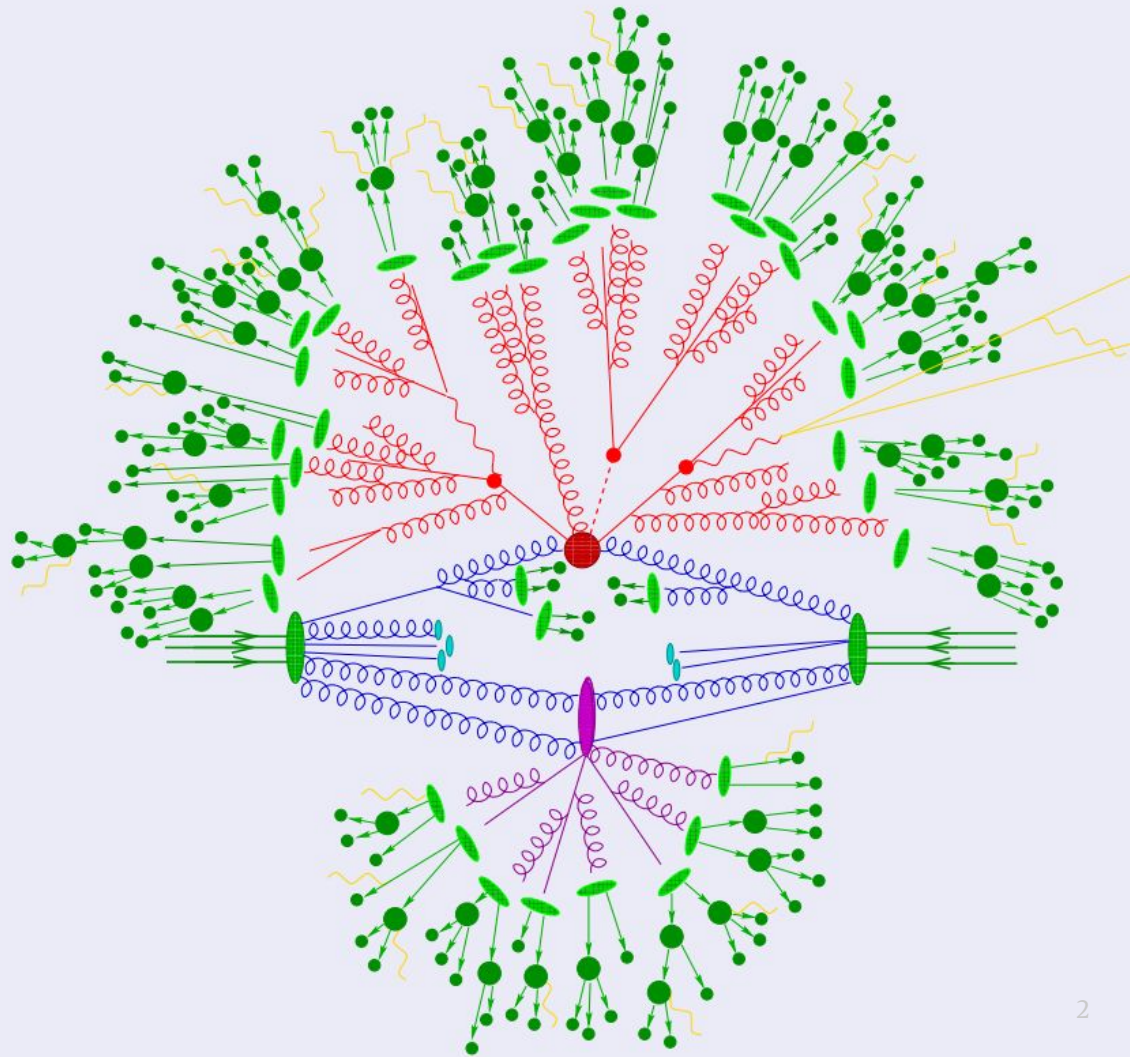
A JOURNEY OF DISCOVERY

Nikhef

Mike Sas, on behalf of the ALICE group
Jamboree Dec 2018

The situation in proton-proton collisions

1. Hard interaction
2. Parton shower
3. Multiple parton interactions
4. Hadronisation
5. Hadron decays

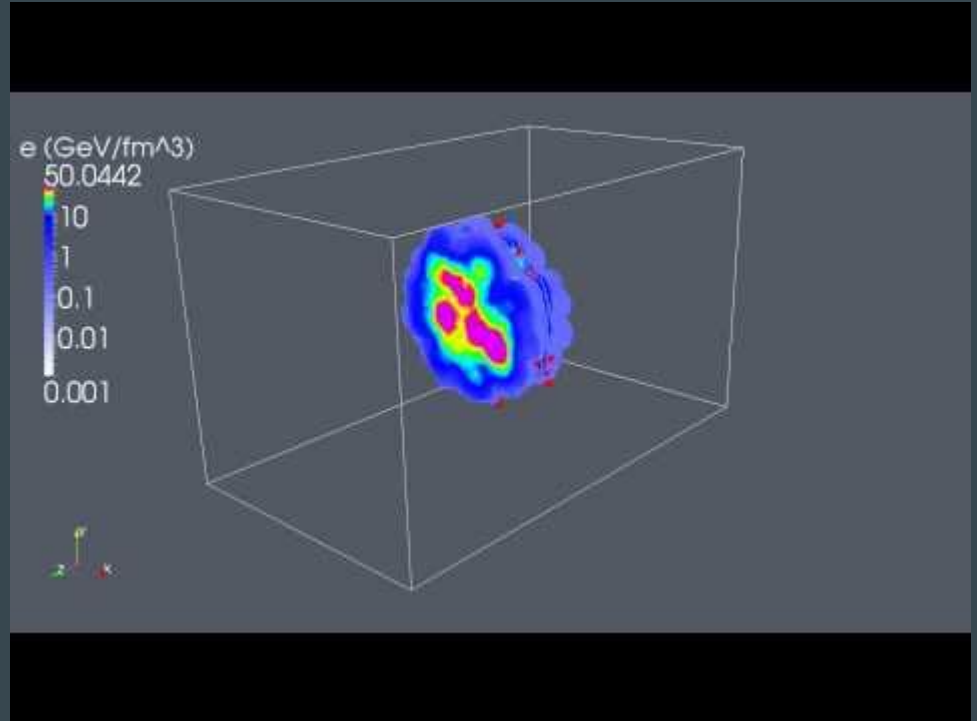


Heavy-ion collisions

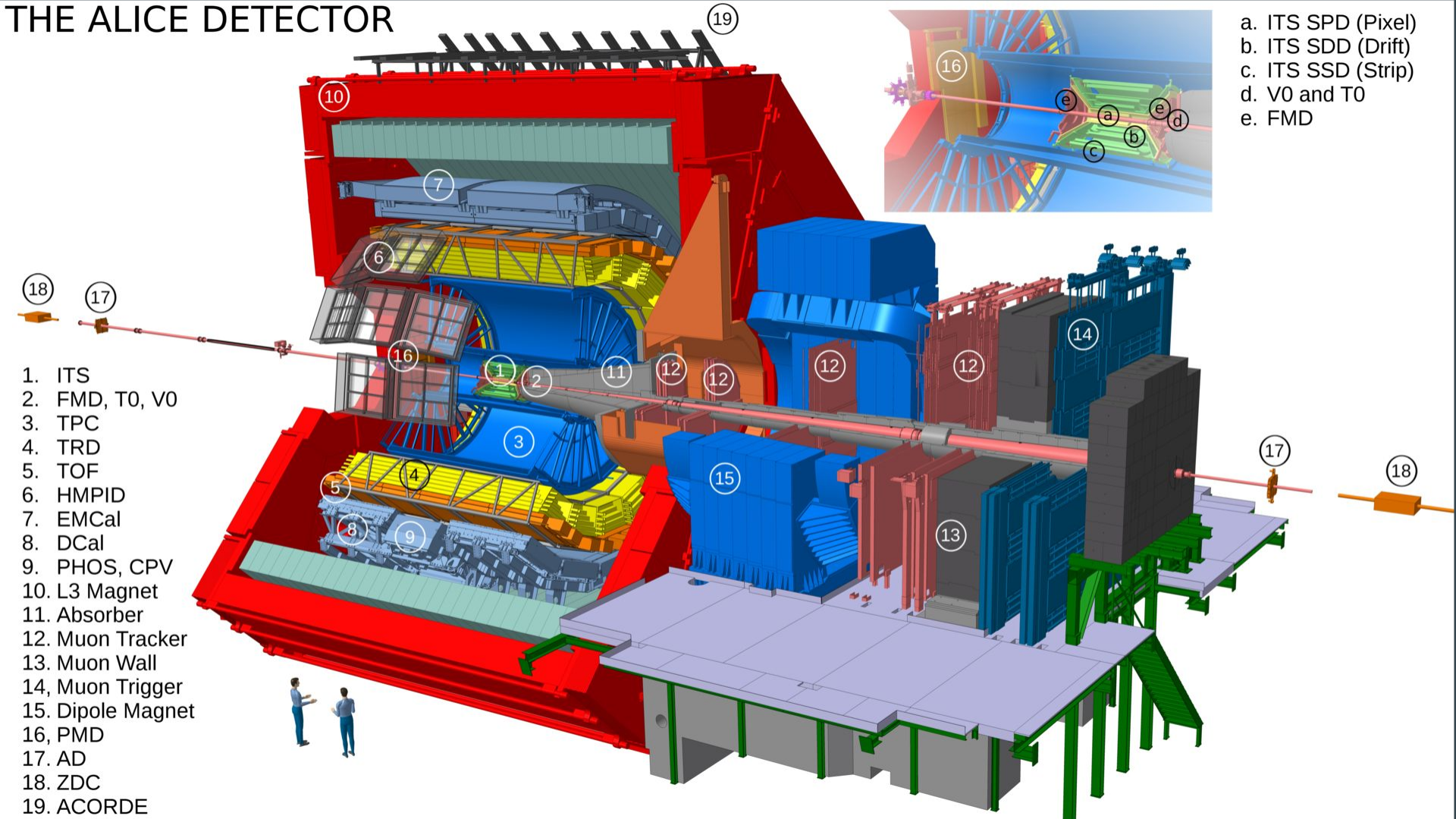
All of the proton-proton stuff...and...

- Many collisions superimposed
- Energy density / temperature high enough for a phase transition to occur
- Creation of hot strongly interacting matter → "QGP"

The game: Measure the properties of the QGP, by disentangling and understanding the mechanisms



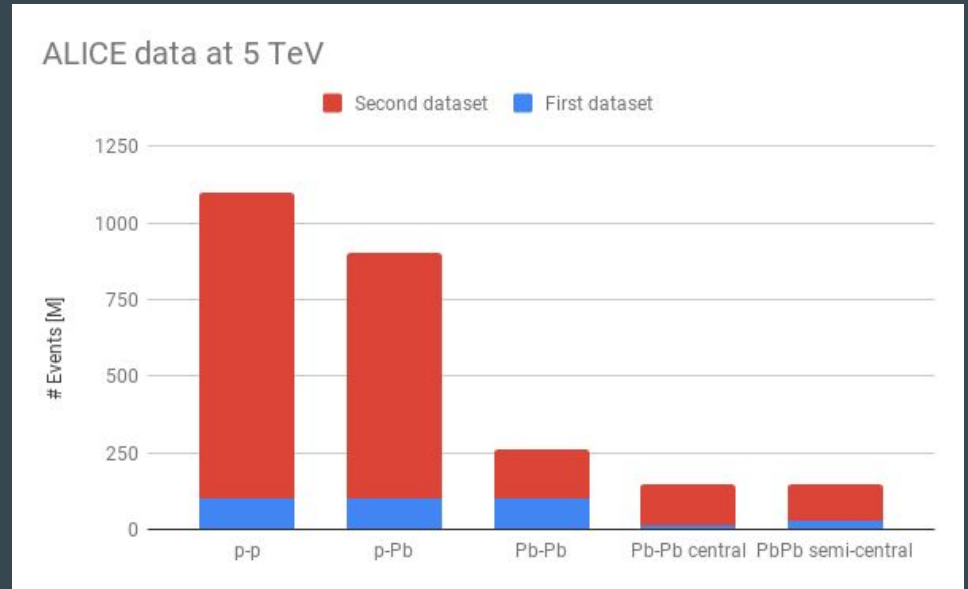
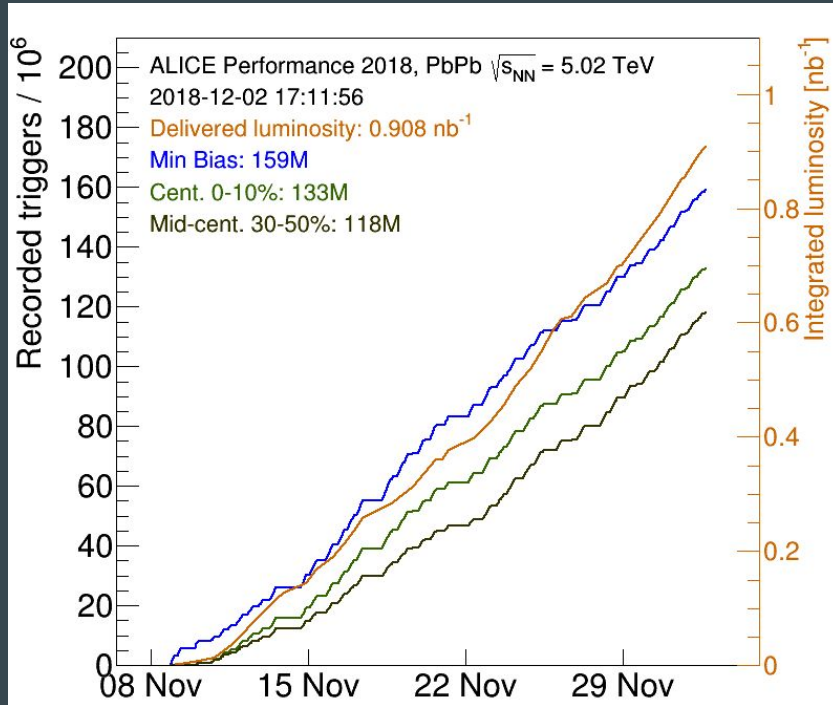
THE ALICE DETECTOR



ALICE data taking

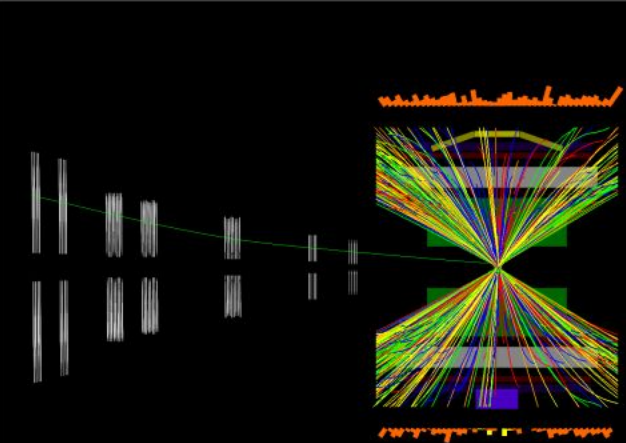
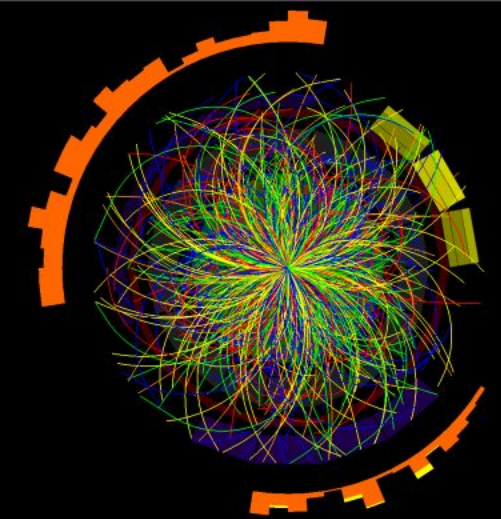
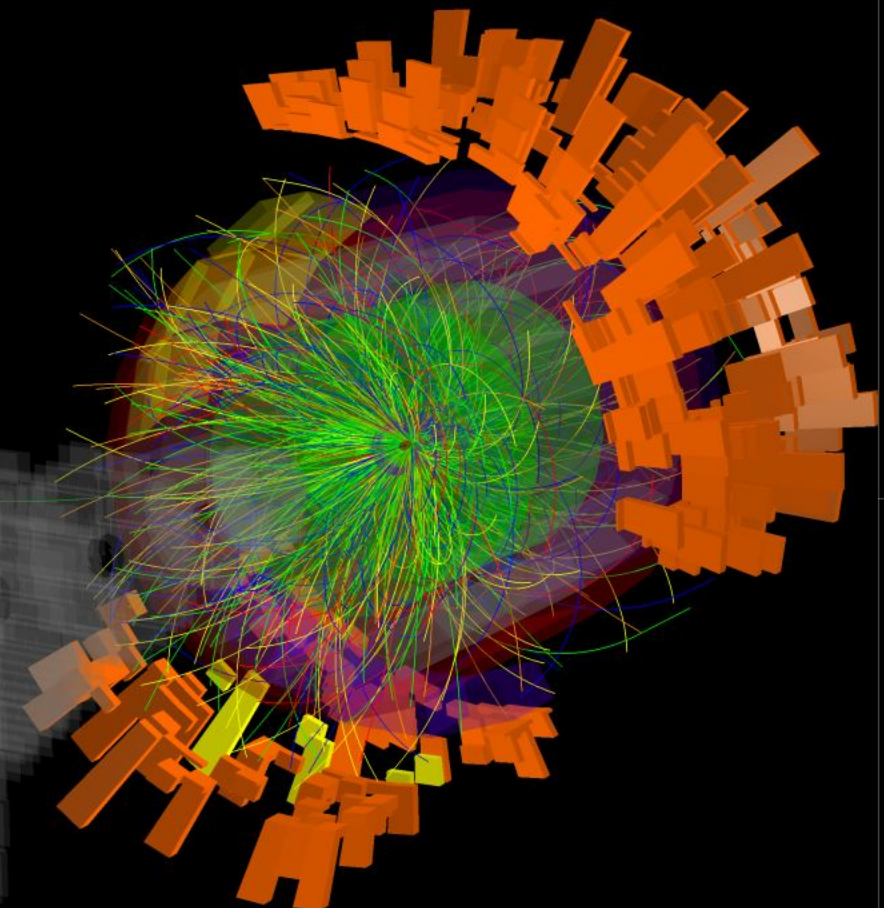
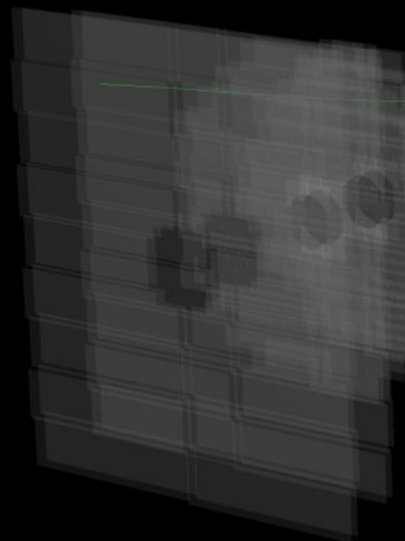


ALICE data taking





ALICE



Run:295585
Timestamp:2018-11-08 20:59:35(UTC)
Colliding system:Pb-Pb
Energy:5.02 TeV

Our group

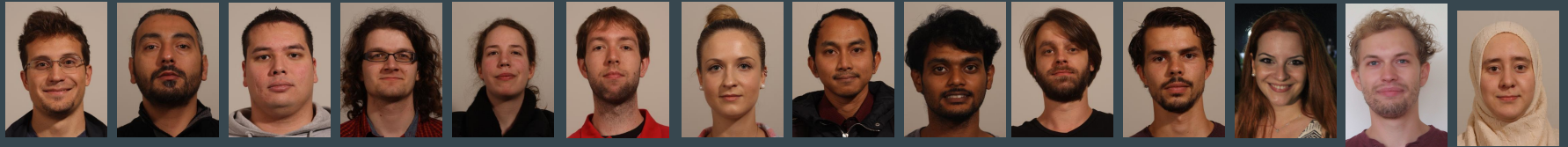


Staff

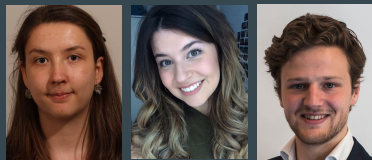


Post-doc

Westerdijk Fellowship



PhD



Master



Kees
Jerom
Rene
Loek
Fedor

Bachelor

In memoriam



Our roles in the ALICE collaboration



Marco:	Physics coordinator
Alessandro:	Heavy Flavour working group convener
Barbara:	HF Correlation and Jets analysis group coordinator
Davide:	Correlations analysis group coordinator
Paul:	ITS-upgrade coordinator
Panos:	Conference committee member
Mike:	Junior representative (finished this year)

Contribution to the “Yellow report”; a document about the future of our field.



Our presence is very significant and notable in ALICE and the whole Heavy-ion physics community!

Conferences & Prizes

Talks at all major conferences: **ICHEP**, **Quark Matter**, **Hard Probes**,...

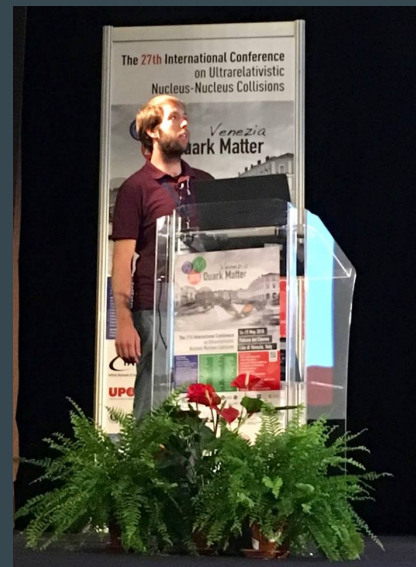
Best experimental talk:

Barbara



Best poster:

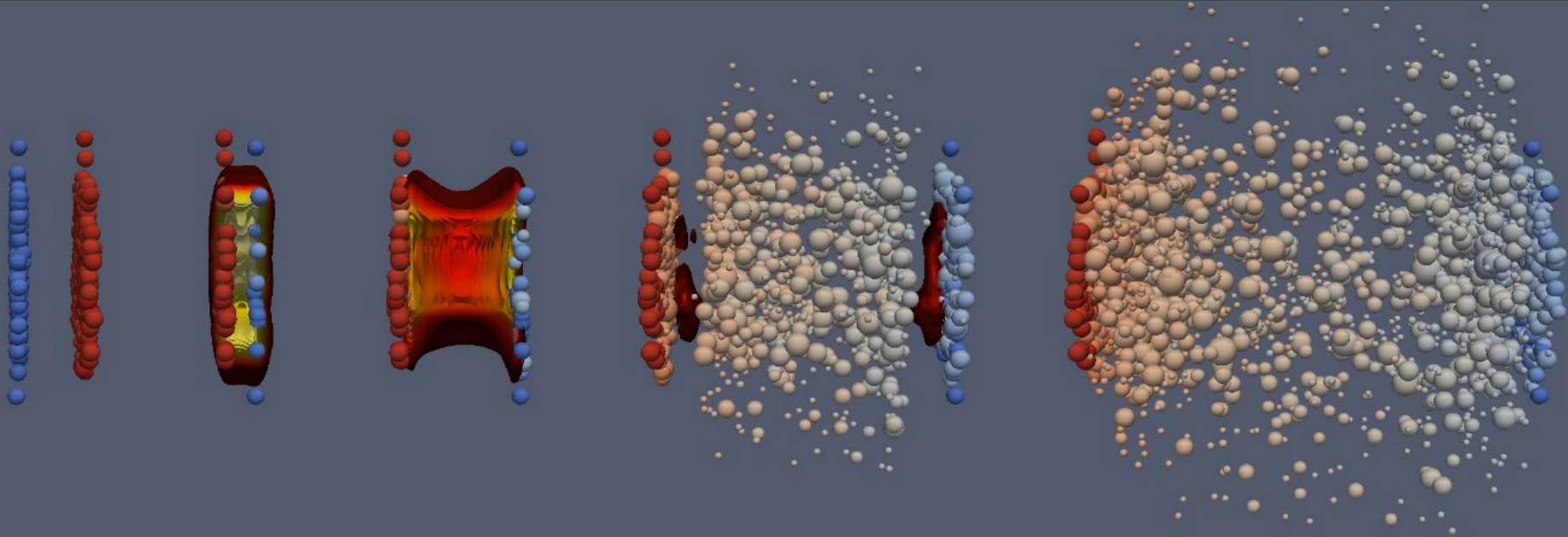
Mike



Jacopo Cum laude!

“Rotating planes, fluctuating shapes”

Our core business



Heavy flavour

-

Jets

-

Photons

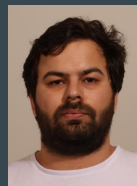
-

Correlations

Papers & preliminaries - Heavy Flavour

Paper “Azimuthal anisotropy of heavy-flavour decay electrons in p-Pb collisions at 5.02 TeV”

<https://arxiv.org/abs/1805.04367>



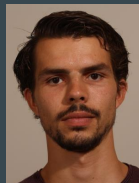
Paper “Measurement of D_0 , D^+ , D^{*+} and D^s production in Pb-Pb collisions at 5.02 TeV”

<https://arxiv.org/abs/1804.09083>



“D-meson cross section in pp at 5.02 TeV”

<https://alice-figure.web.cern.ch/node/12780>



“ D^* RpPb with reference measured at 5TeV”

<https://alice-figure.web.cern.ch/node/13438>



“Cross section, RpPb and RAA for D_0 -tagged jets at 5.02 TeV”

<https://alice-figure.web.cern.ch/node/14622>

<https://alice-figure.web.cern.ch/node/14615>



Papers & preliminaries - Jets

Paper “Medium modification of the shape of small-radius jets in central Pb-Pb collisions at 2.76 TeV”

<https://arxiv.org/abs/1807.06854>



Papers & preliminaries - Photons

Paper “Neutral pion and η meson production in p-Pb collisions at 5.02 TeV”

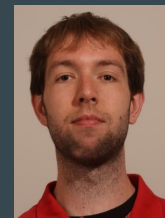
<https://arxiv.org/abs/1801.07051>

Paper “Direct photon elliptic flow in Pb-Pb collisions at 2.76 TeV”

<https://arxiv.org/abs/1805.04403>

“Neutral meson measurements in pPb collisions at 5.02 TeV as function of multiplicity”

<http://alice-figure.web.cern.ch/node/14495>



Papers & preliminaries - Correlations

Paper “Energy dependence and fluctuations of anisotropic flow in Pb–Pb collisions at 5.02 and 2.76 TeV”

<https://arxiv.org/abs/1804.02944>

Paper “Constraining the magnitude of the Chiral Magnetic Effect with Event Shape Engineering in Pb-Pb collisions at 2.76 TeV”

<https://arxiv.org/abs/1709.04723>

“Charge-dependent directed flow of D0 meson in Pb-Pb collisions at 5.02 TeV”

<https://alice-figure.web.cern.ch/node/14441>



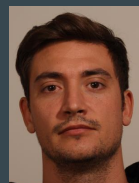
“Chiral magnetic effect in run 2 data”

<https://alice-figure.web.cern.ch/node/13598>



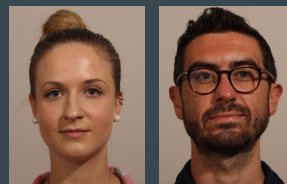
“Transverse sphericity dependent pion femtoscopy in pp @ 7 TeV”

<https://alice-figure.web.cern.ch/node/7334>



“Charged particles and Identified balance functions measurements with Run2 data”

<https://alice-figure.web.cern.ch/node/13995>



FoCal & ITS upgrade

Paper “The FoCal prototype“

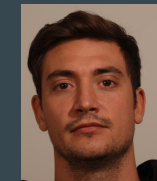
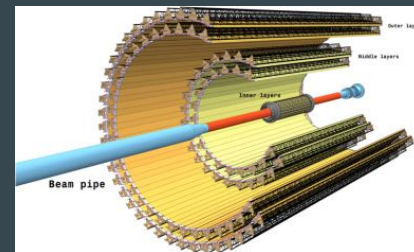
<https://arxiv.org/abs/1708.05164>



FoCal prototype test at point 2

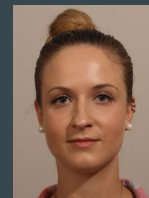


ITS upgrade



Paper “Hadronic Energy Resolution of a Combined High Granularity Scintillator Calorimeter System”

<https://arxiv.org/abs/1809.03909>





Next talks

Physics - Davide

ITS upgrade - Goran

FoCal - Naomi

Backup

Total ALICE papers

