

# **Open Science in ALICE**

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### • Level 1 – Published results

- All ALICE publications published Open Access
- All ALICE publications release data tables in HEPdata
  - Plan to also release response matrices and/or correlations matrices
- Ongoing effort to release RIVET routines
  - Now also Heavy-Ion option available

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<ul> <li>Professor</li> <li>YODA</li> <li>MCplots</li> <li>AGILe</li> <li>Downloads</li> <li>Analyses</li> <li>Standard analyses</li> <li>Analysis changelog</li> <li>Writing an analysis</li> <li>Analysis coverage &amp; wishlists</li> <li>General</li> <li>No searches/HI</li> <li>Searches</li> <li>Heavy ion</li> <li>Documentation</li> <li>Manual &amp; talk links</li> <li>Getting started / tutorials</li> <li>Rivet via Docker</li> <li>Changelog</li> <li>Doxygen code/API docs</li> <li>Source code</li> <li>Contact</li> <li>Follow @RivetYoda 38 followers</li> <li>YouTube</li> </ul>	ALICE_2017_11645239 $A_{\gamma}^{+}$ production in pp collisions at $\sqrt{s} = 7$ TeV and in p-Pb collisions at $\sqrt{s}_{NN} = 5.02$ TeV Experiment: ALICE (LHC) Inspire ID: 1645239 Status: VALIDATED Authors: • Marco Giacalone References: • DOI: 10.1007/JHEPO4(2018)108 • arXiv: 1712.09581 Beam energies: ANY No run details listed The $p_{T}$ -differential production cross section of prompt $A_c^+$ charmed baryons was measured with the ALICE detector at the Large Hadron Collider (LHC) in pp collisions at $\sqrt{s}_{NN} = 5.02$ TeV at midrapidity. The $A_c^+$ and $A_c^-$ were reconstructed in the hadronic decay modes $A_c^+ \rightarrow pK$ $\neg \pi^+, A_c^+ \rightarrow pK_0^0$ and in the semileptonic channel $A_c^+ \Rightarrow e^+ v_c$ . (and charge conjugates). The measured values of the $A_c^+$ DO <sup>0</sup> ratio, which is sensitive to the c-quark hadronisation mechanism, and in particular to the production of baryons, are presented and are larger than those measured previously in different colliding systems, centre-of-mass energies, rapidity and p_r-intervals, where the $A_{\lambda}^+$ poduction process may differ. The results are compared with the expectations obtained from perturbative Quantum Chromodynamics calculations and Monte Carlo event generators. Neither perturbative QCD calculations produce Carlo models in production that the LHC of the $A_{\lambda}^+$ noticear modification factor. $R_{p,P,N}$ is also presented. The $R_{p,P,N}$ is found to be consistent with unity and with that of D mesons within the uncertainties, and consistent with the deconfined medium. Source code: LLICE_2017_11645239.ec
	<pre>1 // -*- C++ -*- 2 #include "Rivet/Analysis.hh" 3 #include "Rivet/Projections/FastJets.hh" 4 #include "Rivet/Projections/FinalState.hh" 5 #include "Rivet/Projections/UnstableParticles.hh" 6 7 namespace Rivet { 8 9</pre>

# **Open Data Policy**

HEPData									
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↓ Max results - ↓ F Sort by -	$\int_{A}^{Z}$ Reverse order Showing <b>10</b>	) of <b>293</b> results							
Date		« < 1 2 >	»						
IIIIIII		ubjettiness in central Pb—Pb collisions hreyasi ; Adamova, Dagmar ; Adler, Alexander ; <i>et al.</i>	at $\sqrt{s_{ m NN}}=2.76$ TeV						
2010 2021	CERN-EP-2021-082, 2021.								
Collaboration <b>Reset</b>	E Inspire Record 1862792 % DOI 10.17182/hepdata.111055								
	The ALICE Collaboration reports the first fully-corrected measurements of the $N$ -subjettiness observable for track-based jets in heavy-ion collisions. This study is perfusion data recorded in pp and Pb-Pb collisions at centre-of-mass energies of $\sqrt{s} = 7$ TeV and $\sqrt{s_{NN}} = 2.76$ TeV, respectively. In particular the ratio of 2-subjettiness								
Subject_areas	🖽 9 data tables								
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Proton-Proton Scattering									
Transverse Momentum46Dependence40	Energy dependence of $\phi$ me	son production at forward rapidity in	pp collisions at the LH	IC					
Single Differential Distribution 23	The ALICE collaboration Acharya, S	hreyasi ; Adamova, Dagmar ; Adler, Alexander ; <i>et al.</i>							
Rapidity Dependence 22	Eur.Phys.J.C 81 (2021) 772, 2021.								



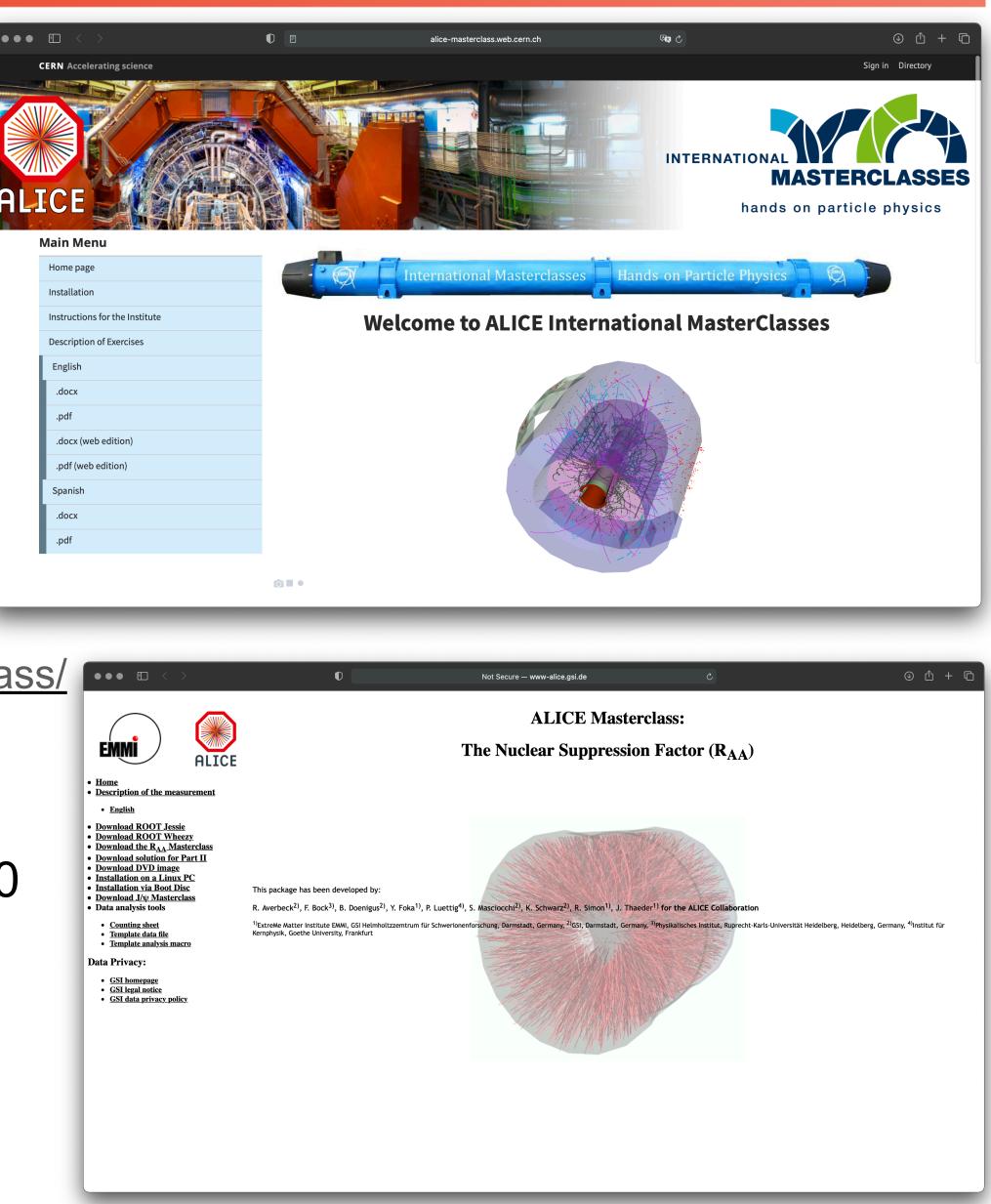




## Level 1 – Published results

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- Ongoing effort to release RIVET routines
- Level 2 Outreach and Education
- International Masterclasses Hands on Particle Physics
- Using samples of proton–proton and lead–lead data
  - strange particles <u>https://alice-masterclass.web.cern.ch</u>
  - the nuclear suppression factor RAA <u>http://www-alice.gsi.de/masterclass/</u>
- Level 3 Reconstructed data Policy adopted by the Collaboration Board on 12 Nov. 2020
- Level 4 Raw data – Unviable

## **Open Data Policy**



elberg, Germany, <sup>4)</sup> Institut für		
	tlberg, Germany, <sup>4</sup> Institut für	





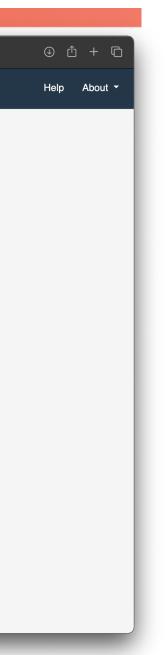
### Current status

- CERN Open Data Portal
  - 5% (7%) of Pb–Pb (pp) 2010 ESD datasets
  - ALICE analysis demonstrator (both VM and contain
- Release plans
  - 50% of Run 1 data by 2023

  - 10% of Run 3 data from 2029
- Data format and software
  - New AOD format based on Run 3 and 4 data format is being developed
  - New software framework developed ALICE O2 project for Run 3 and 4
  - Conversion of Run 1 and 2 data foreseen
    - Significant reduction of output size

## **Open Data Policy – Level 3**

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	opendata CERN Search			
		Dataset × Collision × Derived × ALICE ×		Sort by: Best match () asc. () Display: detailed () 20 results ()
		Filter by type ✓ ☑ Dataset ☑ Collision ☑ Derived ✓ □ Documentation □ About □ Activities □ Guide □ Policy ✓ □ Environment □ VM □ News ✓ □ Software	15 14 1 5 1 1 2 1 1 1 1 1 1 4	LHC10h_PbPb_ESD_139173         Pb-Pb ESD data sample at the collision energy of 2.76 TeV per nucleon pair from RunH of 2010.         Run period from run number 139173         Dataset       Collision         ALICE         LHC2010h_PbPb_ESD_138275         Pb-Pb ESD data sample at the collision energy of 2.76 TeV per nucleon pair from RunH of 2010.         Run period from run number 138275         Dataset       Collision         ALICE
		<ul> <li>Analysis</li> <li>Filter by experiment</li> <li>ALICE</li> <li>ATLAS</li> <li>CMS</li> <li>LHCb</li> </ul>	4 15 69 284 4	LHC2010b_pp_ESD_117222 Proton-Proton ESD data sample at the collision energy of 7 TeV from RunB of 2010. Run period from run number 117222 Detaset Collision ALICE
a by 2028		OPERA PHENIX Filter by year 2010	904 1 14	LHC10h_PbPb_ESD_139438 Pb-Pb ESD data sample at the collision energy of 2.76 TeV per nucleon pair from RunH of 2010. Run period from run number 139438 Detaset Collision ALICE
	Open "https://opendata.cern.ch/record/1103"	in a new tab		LUC100 pp ECD 120505







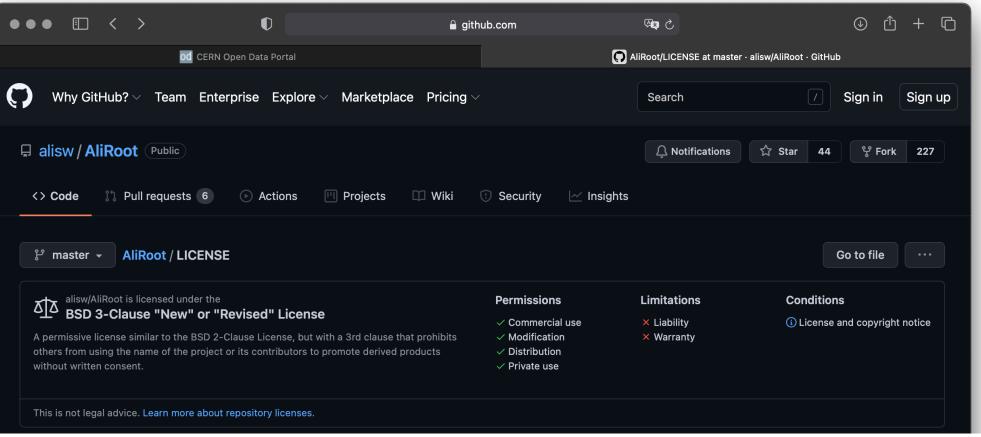
# **Open Source Software**

## Legacy Run 1 and Run 2 software: AliRoot, AliPhysics

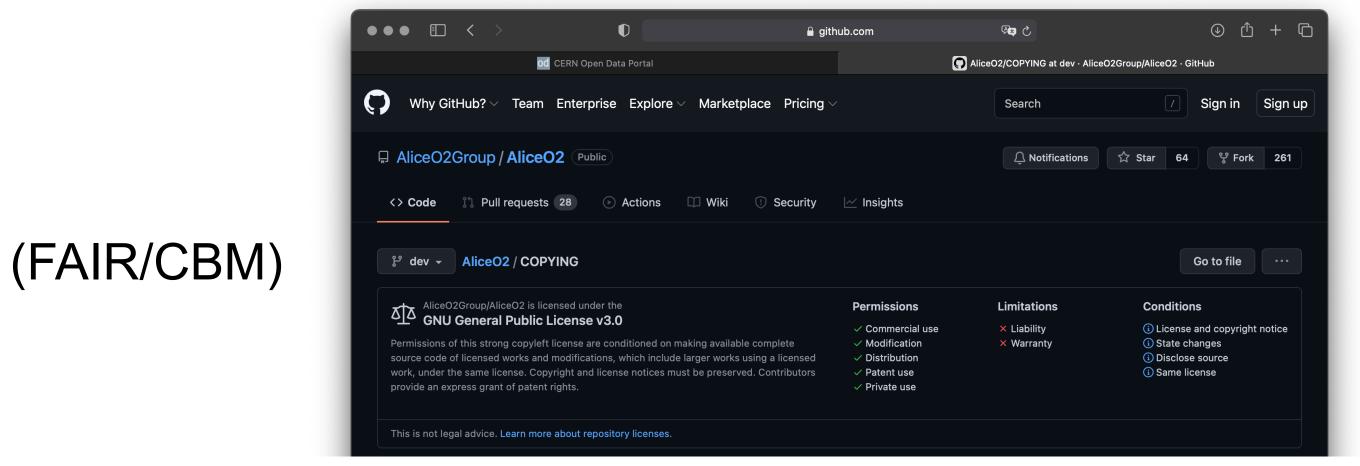
- Distributed under BSD 3-Clause "New" or "Revised" License
- Available in GitHub <u>https://github.com/alisw/AliRoot</u>
- And https://github.com/alisw/AliPhysics
  - Including analysis tasks of published results
- New Run 3 and Run 4 software: AliceO2
  - Distributed under GNU General Public License v3.0
  - Available in GitHub <u>https://github.com/AliceO2Group/AliceO2</u>
  - restricted access.

### Collaborative work

– on software with other facilities/experiments (FAIR/CBM) but also companies



### - Except some components with non-open source licenses, which are available in GitLab with









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Contact us via: alice-editorial-board-chair@cern.ch

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Cern Open Science Working Group – 20/09/2021

# **Thank You!**



**Yvonne Pachmayer** 

