Faculty of Physics

WARSAW UNIVERSITY OF TECHNOLOGY

ALICE @ WUT

Status update for web-based ALICE MasterClass

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IMC SG meeting
30 November 2020

Why web?

- **“Plug and play” operation, as only a modern web browser is required (almost always already installed), no other software requirements**
- **“One code rules all” – due to browser abstraction distinction for devices (ARM, PC computers) or OSes (Windows, Linux, OSX) not required in the code**
  - ***Almost*** **– for best user experience special handling for touchscreen devices recommended**
- **No installation required for using the online version**
- **Possible to use technologies like *Electron* to make a standalone, installable, offline version**

Why not?

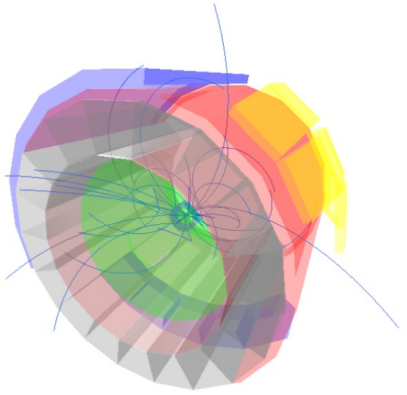
- Standard features known from ROOT (histograms, 3D rendering, handling event data, function fitting and other heavy math, running scripts) not available as “baseline”
  - Library hunting (github, node packages) or implementation from scratch required
- First two features could be in theory fulfilled by JSROOT
  - ROOT functionality and “look & feel” out of the box for them
  - Surprisingly designed as a monolith, all-purpose app – very impractical to use with other community libraries which can provide UI control etc.
- Some elements of exercises might require simplification to make them work better in JS

ALICE Web MasterClass

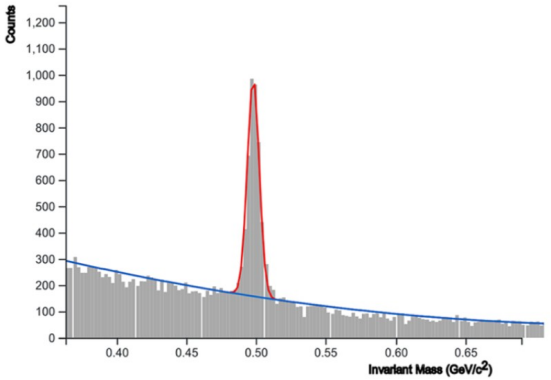
- Initial work already done
- Based on heavily modified LHCb MasterClass
- Proof-of-Concept of the Strangeness MasterClass
  - Internally tested at WUT with students
- A major refactor of the code required before further development (e.g. other exercises)
- Nevertheless, with some issues both the Visual and Large Scale Analysis work and can be completed

Main screen

Welcome to ALICE MasterClass!



Visual Analysis



Large Scale Analysis

European Funds Smart Growth

Republic of Poland

Warsaw University of Technology

European Union
European Regional Development Fund

v0.1

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Visual Analysis

ALICE Masterclass

Visual Analysis Exercise

Event handler

event_3_0.json

previous

next

View

Detector

Tracks

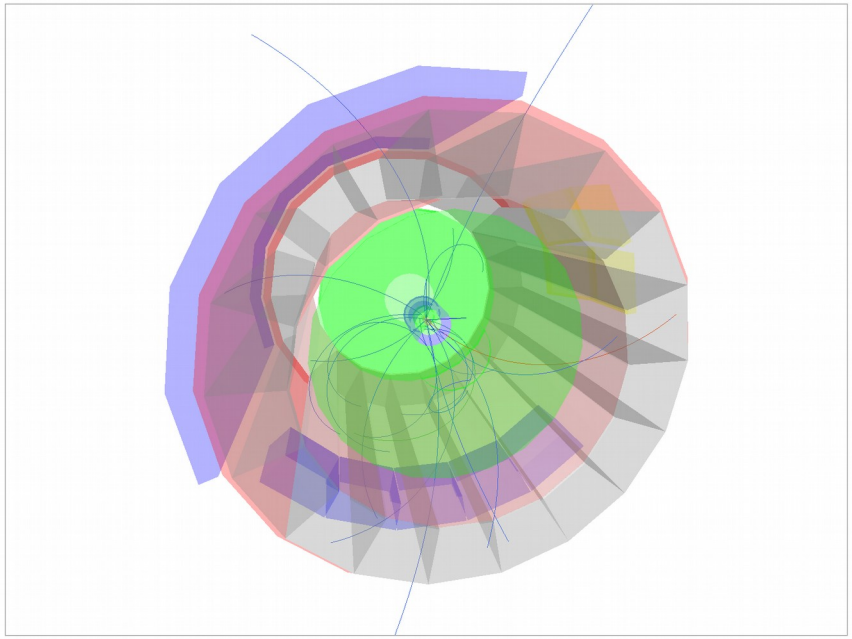
V0s

View

Auto rotate

Legend

e^-e^+	0.0005 GeV/c^2
$\pi^-\pi^+$	0.1396 GeV/c^2
K^0_S	0.4976 GeV/c^2
$p\,\bar{p}$	0.9383 GeV/c^2
$\Lambda\,\overline{\Lambda}$	1.1157 GeV/c^2
$\Xi\,\overline{\Xi}$	1.3217 GeV/c^2



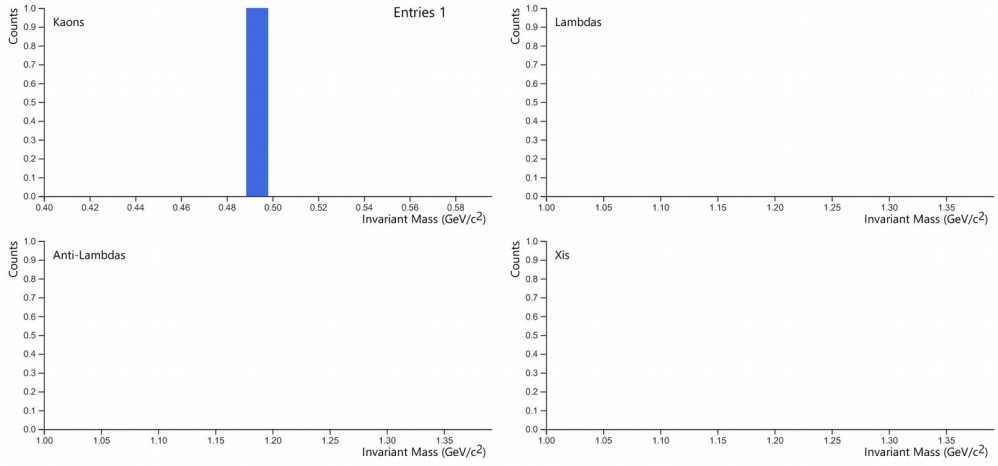
Calculator

	(+)	(-)	(b)
p_x (GeV/c)	0.461	0.387	
p_y (GeV/c)	-0.436	-0.151	
p_x (GeV/c)	0.107	-0.219	
mass (GeV/c^2)	0.13957	0.13957	

Particle

Invariant Mass (GeV/c^2) 0.492 Kaon Add

Histograms



Large Scale Analysis

ALICE Masterclass

Large Scale Analysis Exercise

Navigation

Particle Type

Kaon

Collision & Centrality

Pb-Pb 30%-40%

Plot Invariant mass

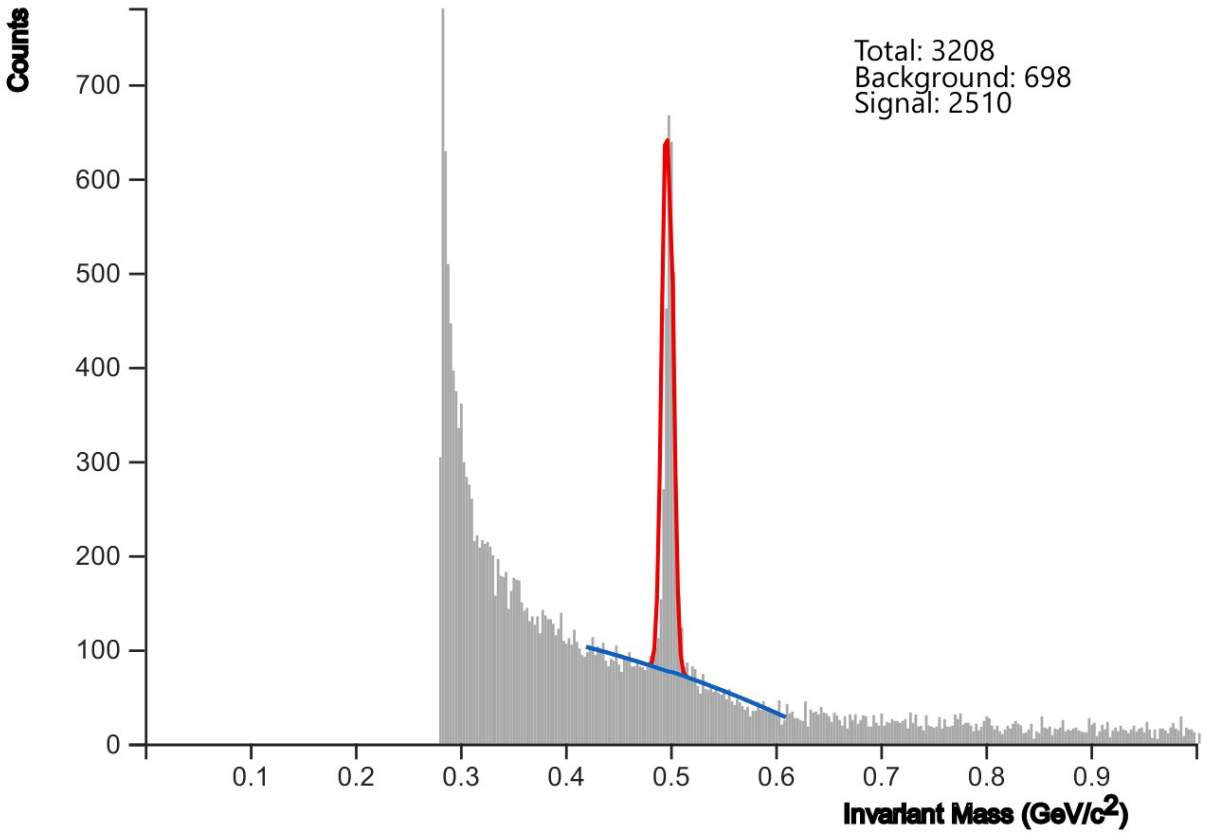
Fit

Signal range

0.485

Background range

0.419 0.612

Fit

Accept