CHEP 2018 - Sofia

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Evolution of the VISPA-project





- server provides
 - o full UI implementation
 - user & group management
 - SSH connections for multiple users

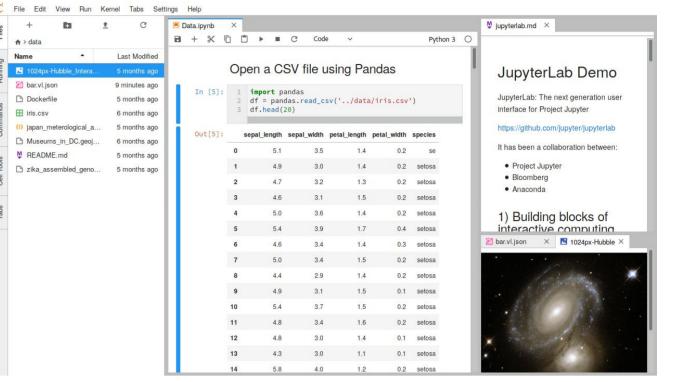






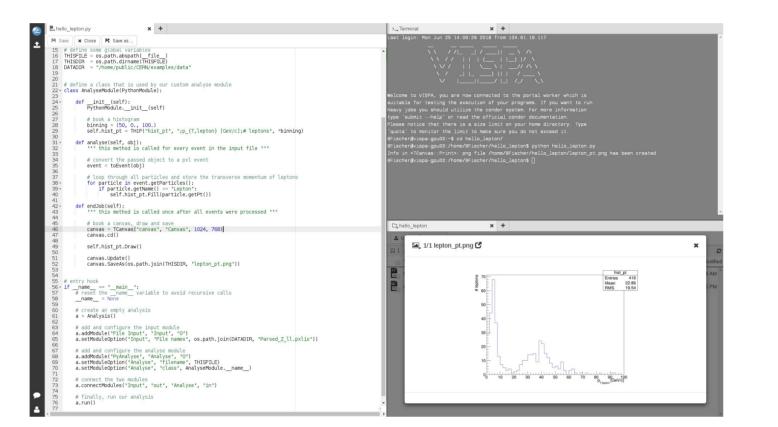


- JupyterLab: next-generation UI
 - successor to Jupyter Notebook single-user focus
 - o currently in beta



- vast community-driven ecosystem
- physics specialized extensions • employed in teaching & research





Feature overlap with VISPA

- modern web based user-interface
- extensible: e.g. render foreign data-formats (e.g. ROOT files)
- unopinionated: language agnostic
- full terminal access



VISPA

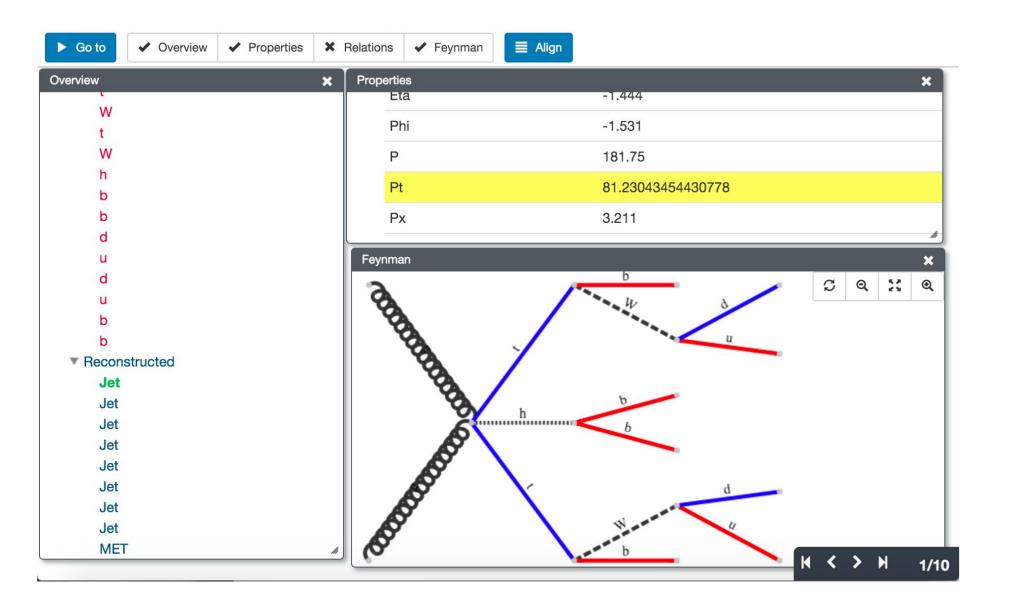
resource flexibility

state of the art UI

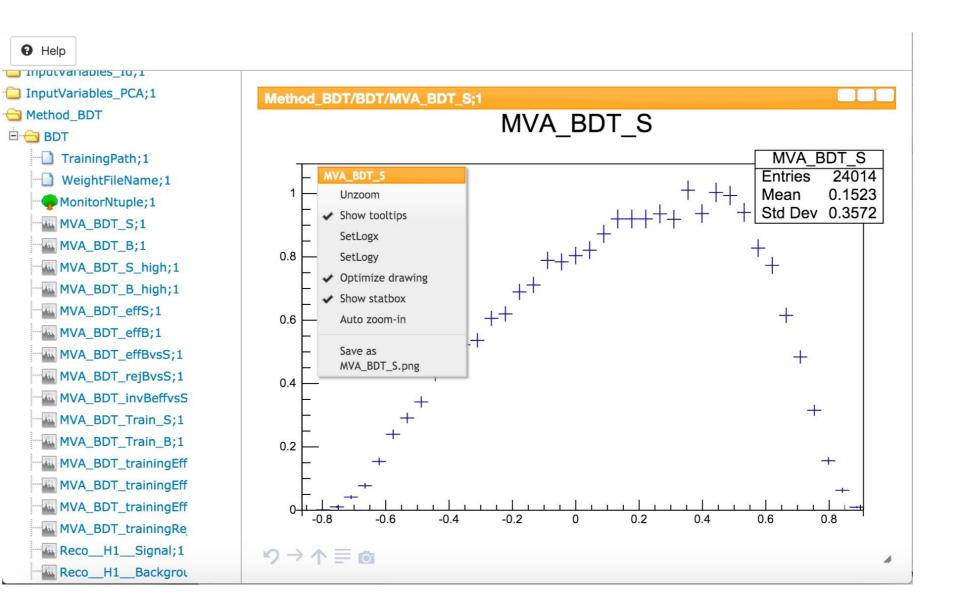
lightweight, modularized node-based server

- Authentication: LDAP, OAuth, ... optional
- SSH (stackable) no port forwarding needed • Transport:
- pip, conda, ... with optional transparent bootstrapping • Environment:
- JupyterLab (default), TensorBoard, custom, ... • Application:

HEP event browser



ROOT file browser



Proof of concept

+ E1 ±	C	hello_lepton.py	I BFischer@visp ×
hello_lepton		1 # -*- coding: utf-8 -*-	
e 🔺	Last Modified	2	
		3 # This is a simple, one-file example for setting up a pxl module chain.	
ello_lepton.py	a minute ago	4 # The chain contains an input module and a custom python analyse module.	
epton_pt.png	seconds ago	5 # Here, we plot the distribution of transverse momentum of leptons	\ / _) / \ \/ / _ // _\
		6 # in Z -> ll decays.	V I=====(I=I / =/)=)
		8 # imports	
		9 import os	Welcome to VISPA, you are now connected to the portal worker which is
		10 from ROOT import TCanvas, TH1F	suitable for testing the execution of your programs. If you want to run
		11 from pxl.core import toEvent	heavy jobs you should utilize the condor system. For more information
		12 from pxl.modules import Analysis, PythonModule	type `submithelp` or read the official condor documentation.
		13	Please notice that there is a size limit on your home directory. Type `quota` to monitor the limit to make sure you do not exceed it.
		14	BFischer@vispa-portal:~\$ cd hello_lepton/
		<pre>15 # define some global variables 16 THISFILE = os.path.abspath(file)</pre>	BFischer@vispa_portal:/home/BFischer/hello_lepton\$ python hello_lepton.py
		17 THISDIR = os.path.dirname(THISFILE)	
		18 DATADIR = "/home/public/CERN/examples/data"	
		19	
		20	
		21 # define a class that is used by our custom analyse module	
		22 class AnalyseModule(PythonModule):	
		23	
		<pre>24 definit(self): 25 PythonModuleinit(self)</pre>	
		26	
		27 # book a histogram	
		28 binning = (50, 0., 100.)	
		<pre>29 self.hist_pt = THIF("hist_pt", ";p_{T,lepton} [GeV/c];# leptons", *binning)</pre>	
		30	🔀 lepton_pt.png 🗙
		<pre>31 def analyse(self, obj):</pre>	
		32 """ this method is called for every event in the input file """ 33	
		33 34 # convert the passed object to a pxl event	g 70 hist_pt Entries 416
		ss event = toEvent(obj)	Entries 416 Mean 22.86
		36	* 60 - RMS 19.54
		37 # loop through all particles and store the transverse momentum of leptons	
		<pre>38 for particle in event.getParticles():</pre>	
		<pre>39 if particle.getName() == "Lepton":</pre>	50
		<pre>40 self.hist_pt.Fill(particle.getPt())</pre>	
		41 42 def endJob(self):	
		43 """ this method is called once after all events were processed """	
		44	30
		45 # book a canvas, draw and save	E n
		46 canvas = TCanvas("canvas", "Canvas", 1024, 768)	20
		47 canvas.cd()	
		48	
		49 self.hist_pt.Draw()	
		50 51 canvas.Update()	
		<pre>51 canvas.opdate() 52 canvas.SaveAs(os.path.join(THISDIR, "lepton_pt.png"))</pre>	0 10 20 30 40 50 60 70 80 90 90 00 00 00 00 00 00 00 00 00 00 00
		53 canvas.savens(os.path.join(inisoin, tepton_pt.png))	FT Jepton (COUTING)
		54	
		55 # entry hook	
		56 ifname == "main":	
		57 # reset thename variable to avoid recursive calls	
		58 None	
		59	*

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