

ATLAS Tracer – Status and Development

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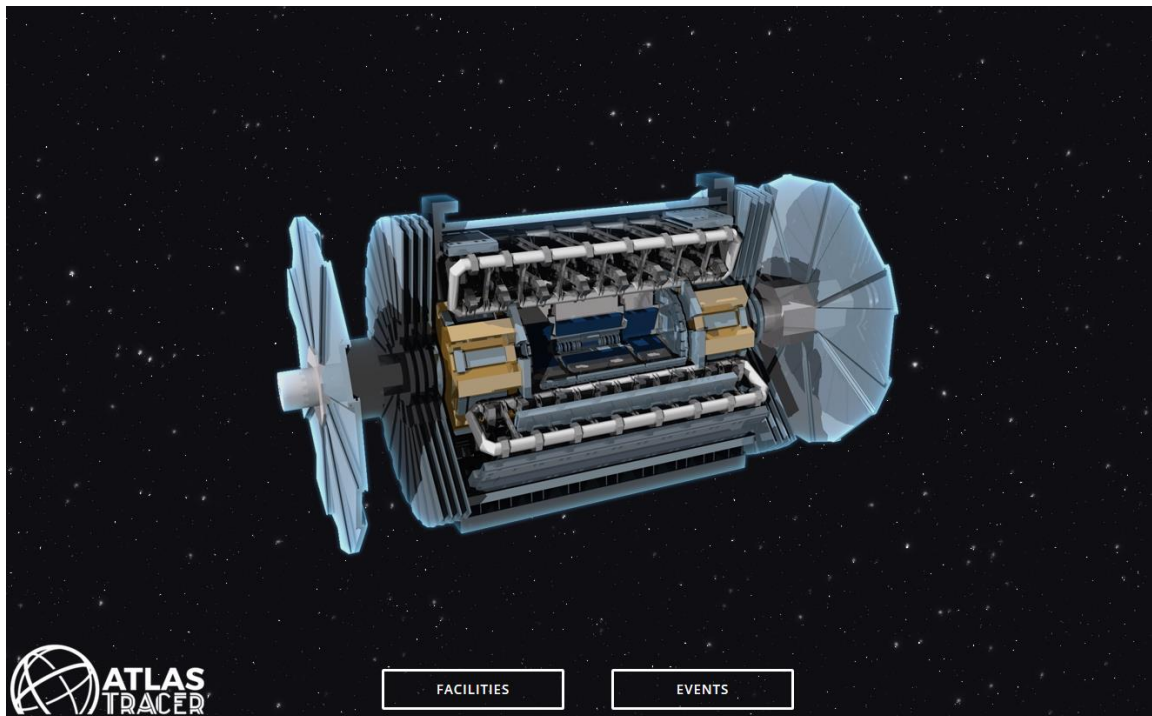
Shota Kobakhidze



Concept



ATLAS Tracer is a web based interactive learning tool of ATLAS facilities and physical processes carrying out on it. Application running inside users browsers without any installations and suitable for all type of hardware and software platforms



Why ATLAS Tracer?

- Comparison of existing Tools:

	ATLANTIS	CAMELIA	VP1	ATLASrft		ATLANTIS	CAMELIA	VP1	ATLASrft		ATLANTIS	CAMELIA	VP1	ATLASrft		ATLANTIS	CAMELIA	VP1	ATLASrft					
Electron	Green	Red	Green	Red	Muon	Green	Green	Green	Red	Track	Green	Red	Green	Red	Neutrino/ETMis	Green	Red	Green	Red	Jet	Green	Red	Red	Red
storegate key					storegate key					storegate key					storegate key					storegate key				
PT					PT					numHits					Sum-ET					PT				
p					p					d0					ET-Mis					ET				
η					η					z0					Etx-Mis					E				
ϕ					ϕ					z0 - zVtx					ETy-Mis					η				
isEM					chi2					phi0					ϕ					ϕ				
label										η										Selection: isGood (isBad , isUgly)				
eOverp										tL										hecf, n90cell, n90const				
hasTrack										pT										quality, qLAr				
										p										jvf, b-Weight, n/a				
										chi2/numDof										emfrac				
										numPixelHits										time, clus time				
										numSCTHits										Out-Of-Time Energy fraction				
										numTRTHits										fracSamplingMax, sMax				
																				tileGap3f, fcorCell, frocJet				
																				frocDotx				

Developments

- Development of ATLAS Geometry for Application
 - Development of Geometry visualisation engine on the base of WebGL/Three.js
 - Development of Events visualisation engine
 - Development of System Interface
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- We have prepared web site for ATLAS Tracer
<http://atlas-tracer.web.cern.ch/>

Development of Events visualisation engine

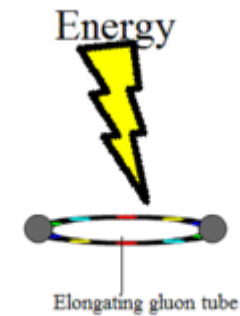
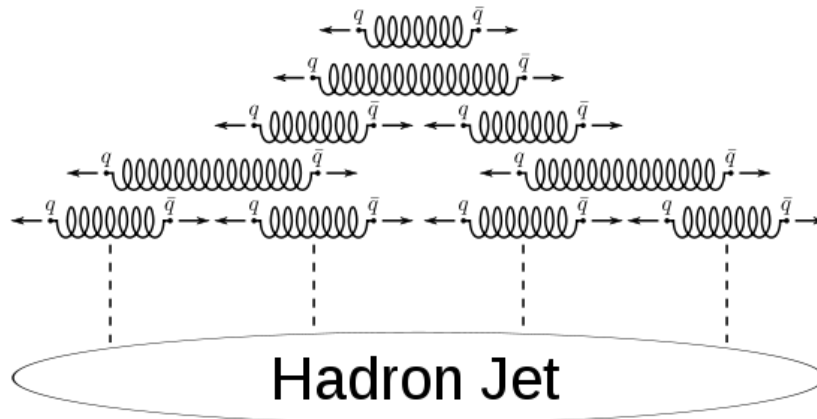
- Development of ATLAS Geometry for Application

XML's



JET's Visualisation

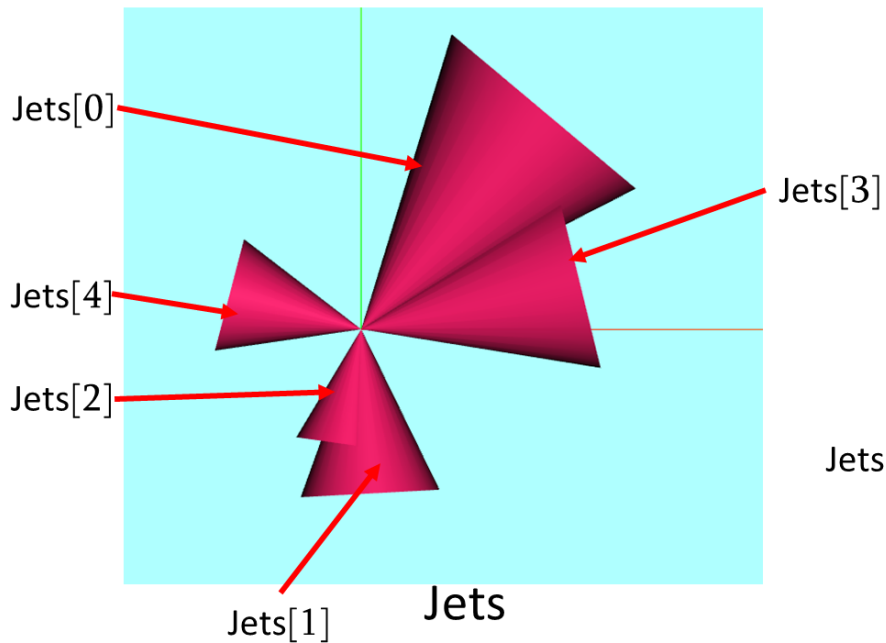
- Our guesses about JETs – Tree made of particles



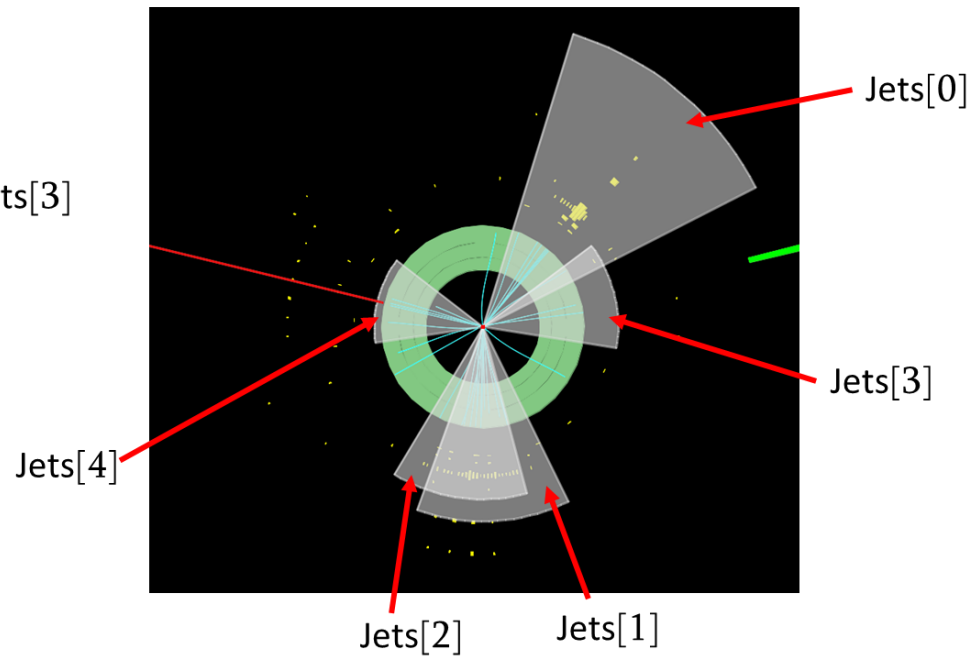
JET's Visualisation

Front — rotated around Z axis

ATLAS Tracer

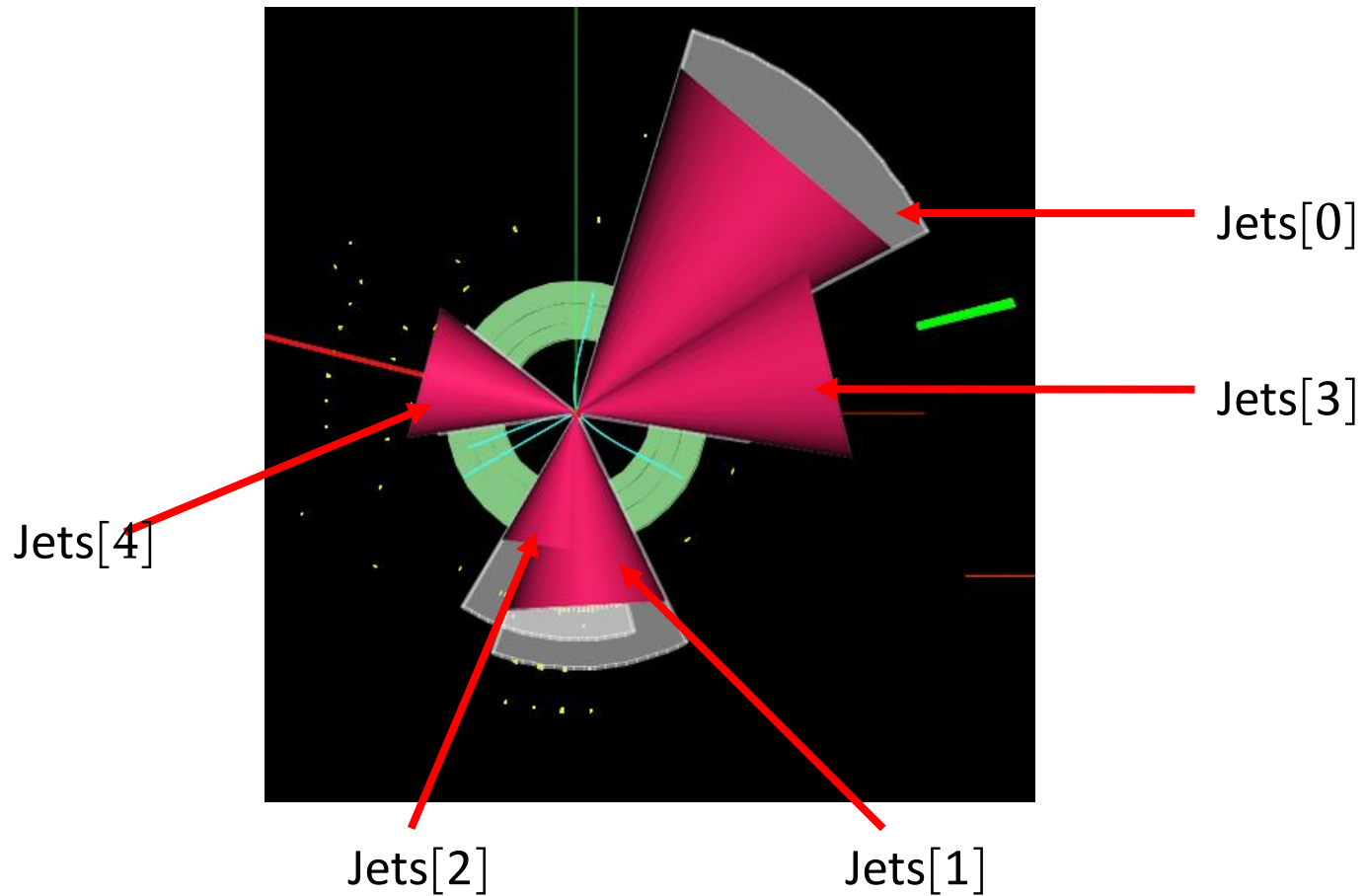


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JET's Visualisation

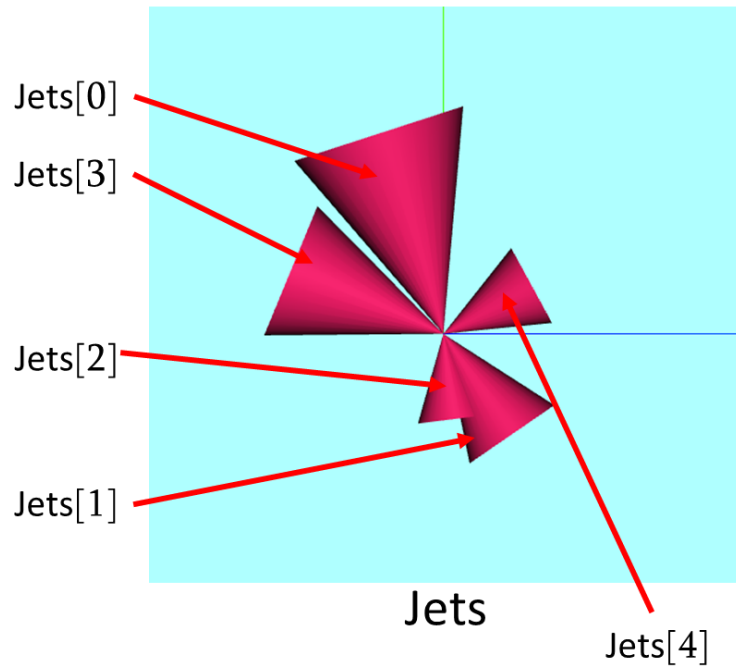
Front — rotated around Z axis



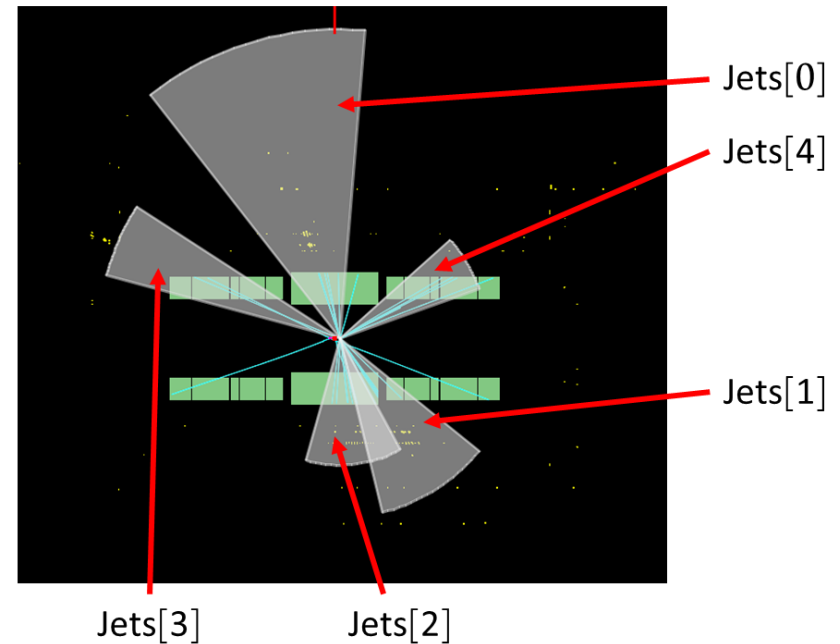
JET's Visualisation

Left – rotated only around X axis

ATLAS Tracer

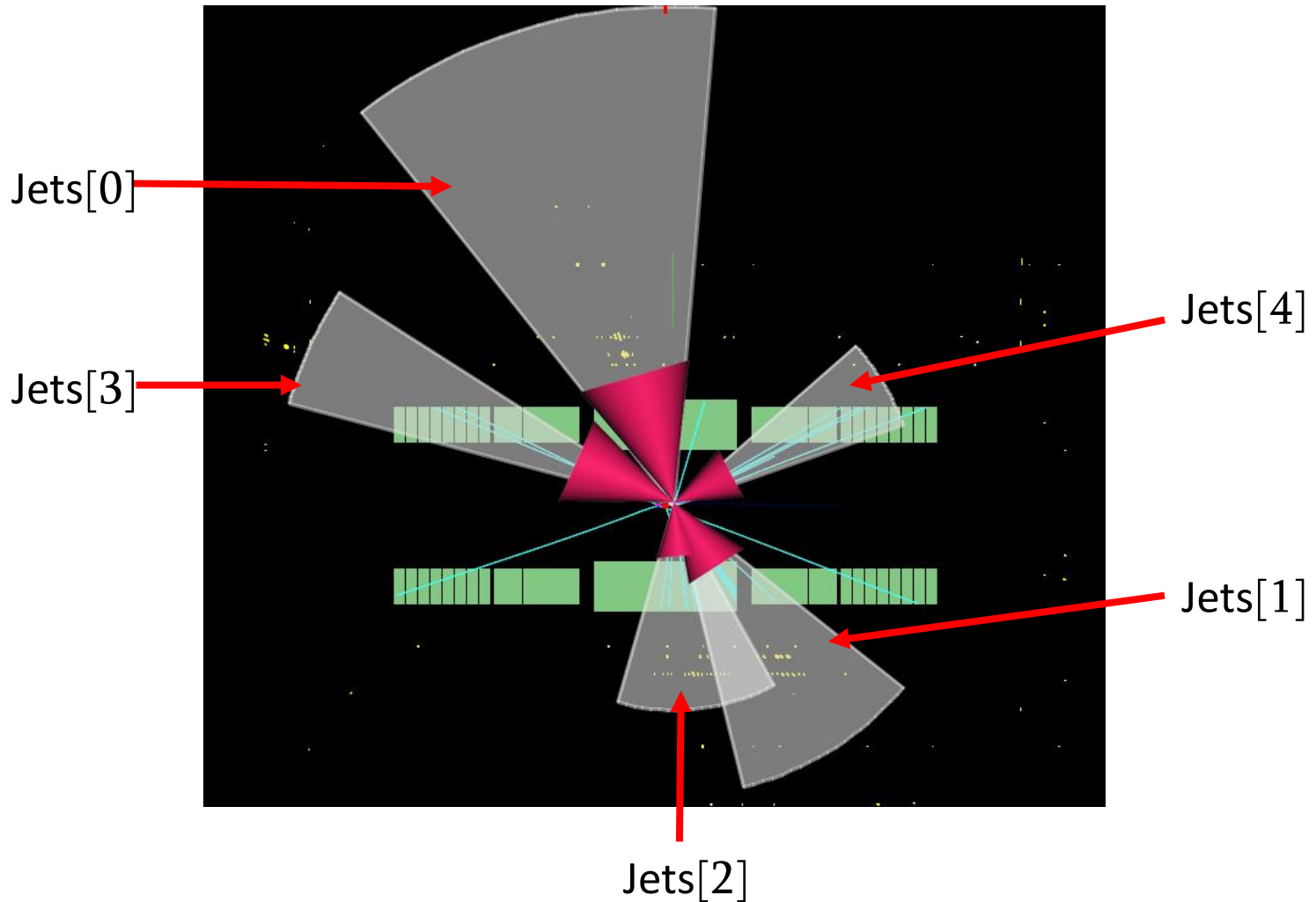


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JET's Visualisation

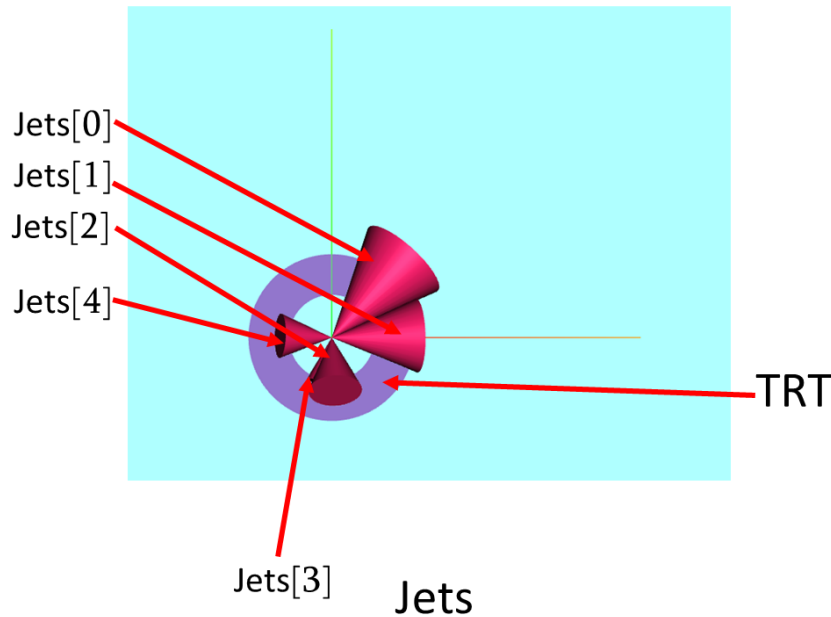
Comparison of Jets - Left



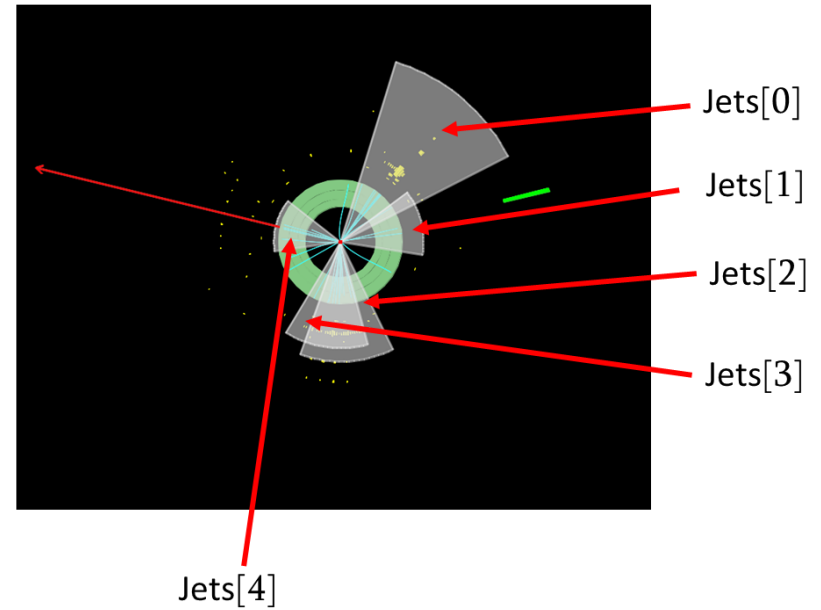
JET's Visualisation

Front – rotated around Z and X axis

ATLAS Tracer

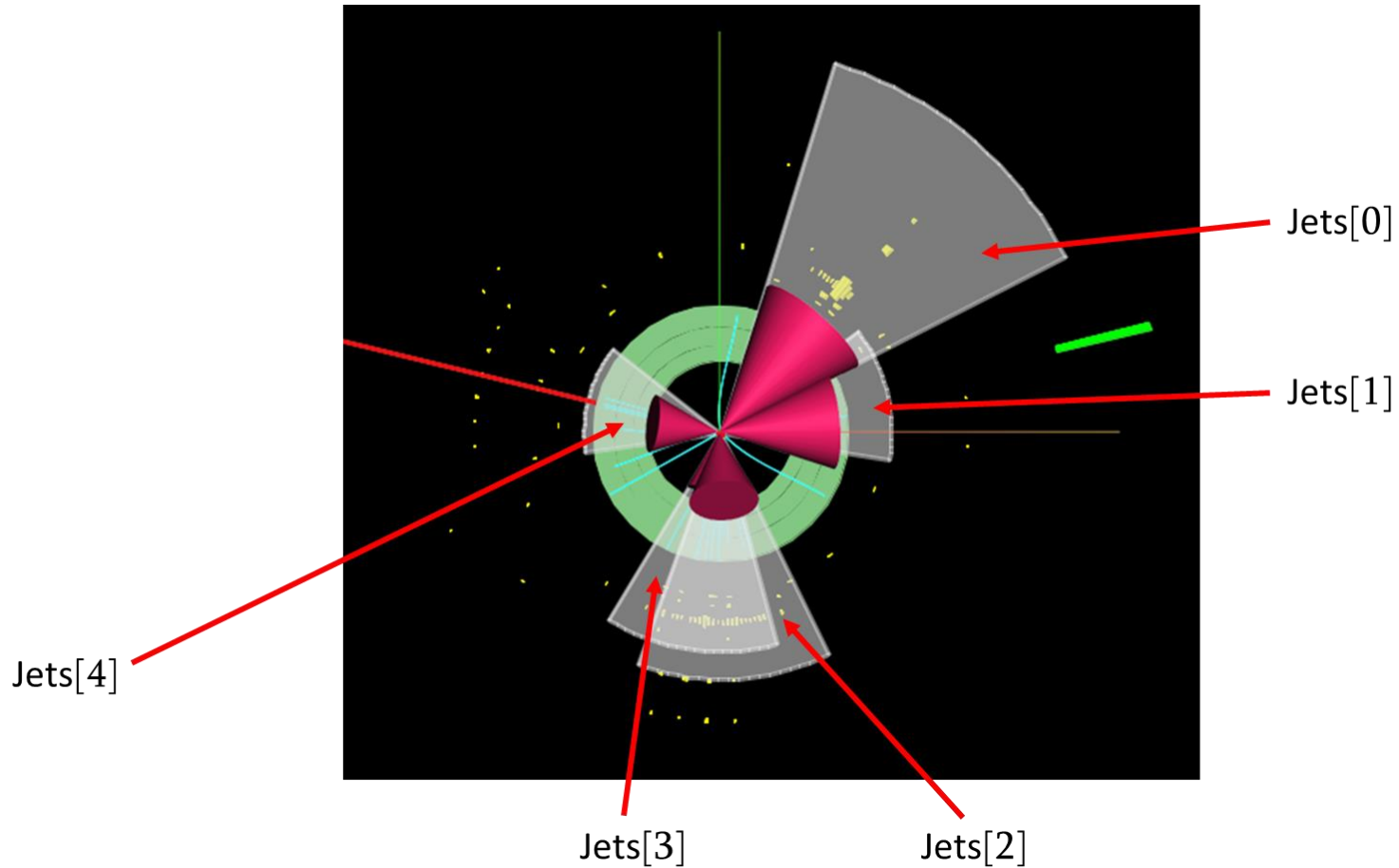


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JET's Visualisation

Comparison of Jets – rotated around X and Z axis



JET's Visualisation

Comparison of JET parameters

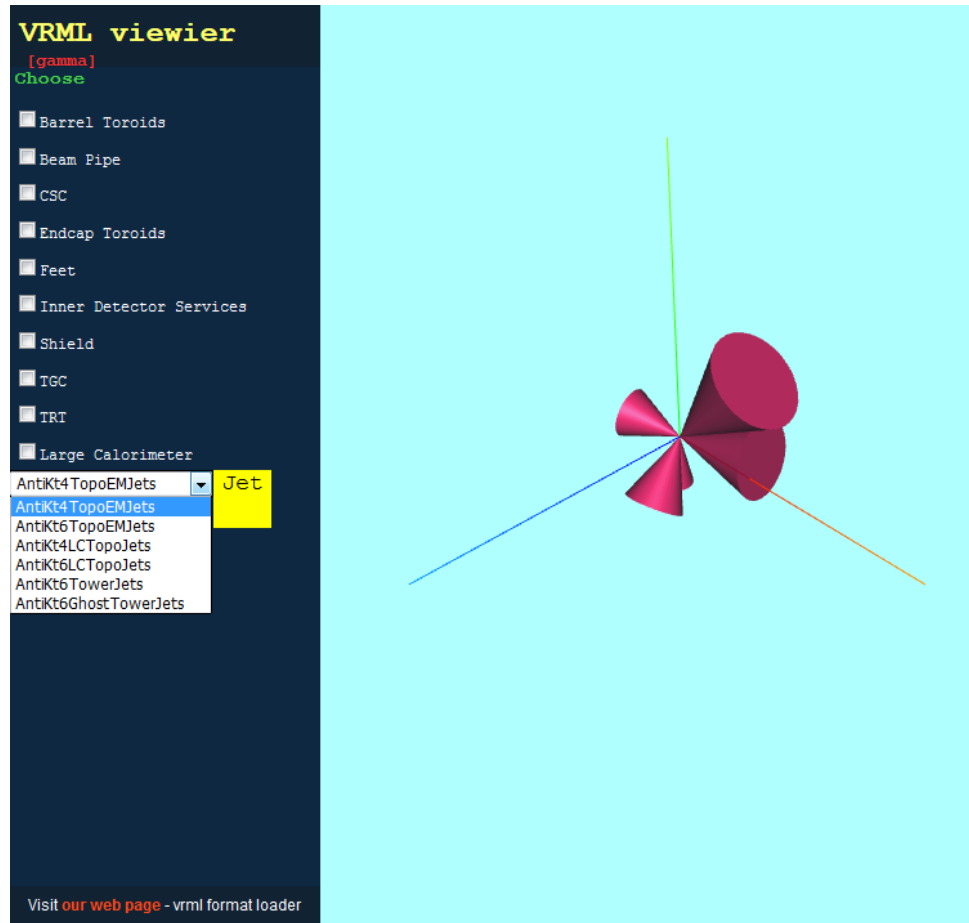
```
-INFORMATIO ABOUT JET-
storegate key: AntiKt4TopoEMJets
PT=52.787GeV
ET=52.844GeV
E=53.277GeV
eta=-0.128
phi=36.163(0.631 rad)
Selection: isGood=1.0, isBad=0.0, isUgly=0.0
hecf=0.00, n90cells= 20 , n00const= 1
emfrac=1.00
quality=0.00, qLAr=0.00
jvf=-1.00, b-weight=-3.45
b-Taggers: JetFitterCOMBNN=-3.45, JetFitterTagNN=-3.39, IP3D+SV1=-1.75, IP2D=-0.47, IP3D=-0.68, SV1=-1.07,
SV2=-1.07,
time=0.44ns, clustime=0.43ns
Out-Of-Time Energy fraction=0.00
fracSamplingMax=0.69 sMax= 2
tileGap3f=0.00, fcorCell=0.00, fcorJet=0.09
fcorDotx=0.00
```

ATLAS Tracer

```
Jet (id: 0 index: 0)
storegate key: AntiKt4TopoEMJets
PT = 52.787 GeV
ET = 52.844 GeV
E = 53.278 GeV
η = -0.128
Φ = 36.163° (0.631 rad)
Selection: isGood = 1.0(isBad = 0.0, isUgly = 0.0)
hecf = 0.00, n90cells = 20 (n90const = 1)
emfrac = 1.00
quality = 0.00(qLAr = 0.00)
jvf = 10.00, b-weight = -3.45
b-Taggers: JetFitterCOMBNN=-3.45, JetFitterTagNN=-3.39, IP3D+SV1=-1.75, IP2D=-0.47, IP3D=-0.68, SV1=-1.07, SV2=-1.07,
time = 0.44 ns (clus time = 0.43 ns)
Out-Of-Time Energy fraction = 0.00
fracSamplingMax = 0.69 (sMax = EMB2)
tileGap3f = 0.00, fcorCell=0.00, fcorJet=0.09
fcorDotx=0.00 (not implemented yet)
```

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Visualization JET's from multiple Algorithms



Thanks!