quark-gluon discriminating quality

performance: $\sqrt{\varepsilon_q(1-\varepsilon_g)}/\sqrt{\varepsilon_g(1-\varepsilon_q)}$

resilience ζ

λ_1
$e_2^{(0.5)}$
$ISD_{k_t>1\,GeV}^{(\beta=-1)}$

empty: $\varepsilon_q=0.5$
filled: $\varepsilon_q=1-\varepsilon_g$

anti-k_t(R=0.5)
$p_t>500$ GeV

$\sqrt{s}=13$ TeV, Pythia (8.230, Monash13), Z+jet

quark-gluon discriminating quality

performance: $\sqrt{\varepsilon_q(1-\varepsilon_g)}/\sqrt{\varepsilon_g(1-\varepsilon_q)}$

resilience ζ

λ_1

$e_2^{(0.5)}$

$ISD_{k_t>1\ GeV}^{(\beta=-1)}$

anti-k_t(R=0.5)
$\varepsilon_q=1-\varepsilon_g$

solid/filled: plain jet
dashed/empty: mMDT($z_{cut}=0.1$)

√s=13 TeV, Pythia (8.230, Monash13), Z+jet

quark-gluon discriminating quality

performance: $\sqrt{\varepsilon_q(1-\varepsilon_g)}/\sqrt{\varepsilon_g(1-\varepsilon_q)}$

resilience ζ

λ_α

$e_2^{(\alpha)}$

$\text{ISD}^{(\beta=-1)}$

2 TeV

1 TeV

500 GeV

anti-k_t(R=0.5)

$\varepsilon_q = 1-\varepsilon_g$

solid/filled: $\alpha=0.5$, $k_{t,\text{ISD}}>1$ GeV

dashed/empty: $\alpha=1$, $k_{t,\text{ISD}}>2$ GeV

$\sqrt{s}=13$ TeV, Pythia (8.230, Monash13), Z+jet

quark-gluon discriminating quality

performance: $\sqrt{\varepsilon_q(1-\varepsilon_g)}/\sqrt{\varepsilon_g(1-\varepsilon_q)}$

resilience ζ

λ_α
$e_2^{(\alpha)}$
$\mathrm{ISD}^{(\beta=-1)}$

$\sqrt{s}=13$ TeV, Pythia (8.230, Monash13), Z+jet

quark-gluon discriminating quality

performance: $\sqrt{\varepsilon_q(1-\varepsilon_g)}/\sqrt{\varepsilon_g(1-\varepsilon_q)}$

resilience ζ

λ_α
$e_2^{(\alpha)}$
$ISD^{(\beta=-1)}$

$\sqrt{s}=1$ TeV, Pythia (8.230, Monash13), Z+jet

quark-gluon discriminating quality

performance: $\sqrt{\varepsilon_q(1-\varepsilon_g)}/\sqrt{\varepsilon_g(1-\varepsilon_q)}$

resilience ζ

λ_1

$e_2^{(0.5)}$

$ISD_{k_t>1\ GeV}^{(\beta=-1)}$

anti-k_t(R=0.5)

best performance

solid

solid/filled: plain jet

dashed/empty: mMDT(z_{cut}=0.1)

$\sqrt{s}$=13 TeV, Pythia (8.230, Monash13), Z+jet

quark-gluon discriminating quality

performance: $\sqrt{\varepsilon_q(1-\varepsilon_g)}/\sqrt{\varepsilon_g(1-\varepsilon_q)}$

resilience ζ

λ_α

$e_2^{(\alpha)}$

$ISD^{(\beta=-1)}$

2 TeV
1 TeV
500 GeV

anti-k_t(R=0.5)
best performance

solid/filled: α=0.5, $k_{t,ISD}$>1 GeV
dashed/empty: α=1, $k_{t,ISD}$>2 GeV

$\sqrt{s}$=13 TeV, Pythia (8.230, Monash13), Z+jet

quark-gluon discriminating quality

performance: $\sqrt{\varepsilon_q(1-\varepsilon_g)}/\sqrt{\varepsilon_g(1-\varepsilon_q)}$ vs. resilience ζ

Legend:
- λ_α
- $e_2^{(\alpha)}$
- $ISD^{(\beta=-1)}$

$\sqrt{s}$=13 TeV, Pythia (8.230, Monash13), Z+jet

quark-gluon discriminating quality

performance: $\sqrt{\varepsilon_q(1-\varepsilon_g)}/\sqrt{\varepsilon_g(1-\varepsilon_q)}$ vs resilience ζ

Legend:
- λ_α
- $e_2^{(\alpha)}$
- $ISD^{(\beta=-1)}$

√s=13 TeV, Pythia (8.230, Monash13), Z+jet

quark-gluon discrimination (UE only)

performance: $\sqrt{\varepsilon_q(1-\varepsilon_g)}/\sqrt{\varepsilon_g(1-\varepsilon_q)}$ vs resilience ζ

λ_1
$C_{0.5}$
ISD
n_{SD}

$\sqrt{s}=13$ TeV, Pythia (8.230, Monash13), Z+jet

quark-gluon discrimination (hadron only)

performance: $\sqrt{\varepsilon_q(1-\varepsilon_g)}/\sqrt{\varepsilon_g(1-\varepsilon_q)}$

resilience ζ

λ_1
$e_{0.5}$
ISD_1

$p_t > 500$ GeV, anti-k_t(R=0.5)

$\sqrt{s}$=13 TeV, Pythia (8.230, Monash13), Z+jet

quark-gluon discrimination (hadron only)

performance: $\sqrt{\varepsilon_q(1-\varepsilon_g)}/\sqrt{\varepsilon_g(1-\varepsilon_q)}$

resilience ζ

λ_1
$e_2^{(0.5)}$
$ISD_{k_t>1\ GeV}^{(\beta=-1)}$

$p_t>1$ TeV, anti-k_t(R=0.5)

empty: $\varepsilon_q=0.5$
filled: $\varepsilon_q=1-\varepsilon_g$

$\sqrt{s}=13$ TeV, Pythia (8.230, Monash13), Z+jet

quark-gluon discrimination (hadron only)

performance: $\sqrt{\varepsilon_q(1-\varepsilon_g)}/\sqrt{\varepsilon_g(1-\varepsilon_q)}$

resilience ζ

λ_1
$e_1^{(0.5)}$
$ISD_{k_t>1\,GeV}^{(\beta=-1)}$

$p_t>2$ TeV, anti-k_t(R=0.5)

empty: $\varepsilon_q=0.5$
filled: $\varepsilon_q=1-\varepsilon_g$

$\sqrt{s}$=13 TeV, Pythia (8.230, Monash13), Z+jet