EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH

Energy and Particle Flow in Three-Jet and Radiative Two-Jet Events from Hadronic Z Decays

L3 Collaboration

Abstract

γ

γ

Introduction

$+\ -$

γ

γ

γ $\sqrt{s} \approx$ $. \times$ ^{6}

1)

The L3 Detector

π

$\circ$

$\circ$

---

[1] A discussion of the model parameter tuning for L3 is given in reference [11].

Event Selection

$$. < \frac{E_{\rm vis}}{\sqrt{s}} < \ . , \quad \frac{|E_{||}|}{E_{\rm vis}} < \ . , \quad \frac{E_{\perp}}{E_{\rm vis}} < \ . , \quad N_{\rm cluster} > \quad ,$$

$E_{\rm vis}$ $E_{||}$

$E_{\perp}$

$N_{\rm cluster}$

γ

γ

$^{\circ} < \theta < \quad ^{\circ}$ θ

γ

$^{\circ} < \theta < \quad ^{\circ}$

y_{cut} $.$

$\pm$

$p_{\mu} >$

$\pm$

γ

$^{\circ}$

γ $^{\circ} < \theta < \quad ^{\circ}$

Q^2

γ

$\sqrt{s'}$ $\sqrt{s - \ E_{\gamma}\sqrt{s}}$ E_{γ}

γ

$^{\circ}$

$^\circ$ γ

$\pm$

$\pm$

$\pm$ $\pm$

γ

γ

$^\circ$

p_x, p_y, p_z x, y, z x

y

$$E_c \quad E_{\gamma c} - E_{\gamma} - \frac{E_{c1} \quad E_{c2} \quad E_{c3}}{\ }$$

$E_{\gamma c}$ E_{γ} E_{c1} E_{c2} E_{c3}

$-p_x, -p_y, -p_z$

p_x, p_z, p_y $-p_x, -p_z, -p_y$

$p_y \gg p_z \approx$

E_c $E_c \simeq$

ε $E_{\gamma}/E_{\rm jet3}$

ε

$|E_c| <$

$\varepsilon >$.

. $\pm$ . . $\pm$.

$\pm$ $\pm$

γ

ε

ε

$\varepsilon >$.

γ $\sim$

A_{12} A_{13}

Results

γ

γ

γ

$\circ$ $\circ$

γ R_N R_E γ

$. \times {}^{6}$ $. \times {}^{6}$ $. \times {}^{6}$

R_E R_N

γ

	$\gamma \times {}^{-3}$	$\times {}^{-3}$	R_E
	. ± .	. ± .	. ± .
	. ± .	. ± .	. ± .
	. ± .	. ± .	. ± .
	. ± .	. ± .	. ± .
	γ		R_N
	. ± .	. ± .	. ± .
	. ± .	. ± .	. ± .
	. ± .	. ± .	. ± .
	. ± .	. ± .	. ± .

$\circ$ $\circ$

$/ \quad \gamma$

- R_N . R_E .
- ε R_N $\pm$. R_E $\pm$. E_c
- y_{cut} . R_N R_E
- γ γ . $^\circ$ R_N $-$. R_E $-$.
- y_{cut} . $\times$ $^{-6}$ R_N . R_E
- $\pm$ $^\circ$ R_N R_E $\pm$.
- γ γ R_N R_E
- $\pm$ $^\circ$ γ $\pm$. R_N R_E

R_E . $\pm$. $\pm$. N . $\pm$. $\pm$. ,

σ μ R_E . $\pm$. $\pm$. R_N . $\pm$. $\pm$.

γ

P_{out}

P_{out} P_{out}

γ

γ

γ

α P_{out} $P_{out} > P_{out}^{cut}$

$P_{out} > .$ $.$

$^\circ,$ $^\circ$ γ

γ P_{out}

$P_{out} > .$

ρ_E P_{out} $R_E^{P_{out}}/R_E$ ρ_N P_{out} $R_N^{P_{out}}/R_N$ $P_{out} > .$

$P_{out} > .$

ρ_E ρ_N

	ρ_E	ρ_N	ρ_E	ρ_N
	. ± .	. ± .	. ± .	. ± .
	. ± .	. ± .	. ± .	. ± .
	. ± .	. ± .	. ± .	. ± .
	. ± .	. ± .	. ± .	. ± .

ρ_E P_{out} $R_E^{P_{out}}/R_E$ ρ_N P_{out} $R_N^{P_{out}}/R_N$

$^\circ,$ $^\circ$

P_{out} $\sim$ σ

P_{out}

Conclusions

Acknowledgments

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References

et al. **B101**

et al. **C21**

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97

B94

B165

43

C27

B238

γ *et al.* **57**

et al. **57**

et al. **C39**

32

34

B310

B310

39

43

et al. **C55**

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C53

B345

B241

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et al. **C39**

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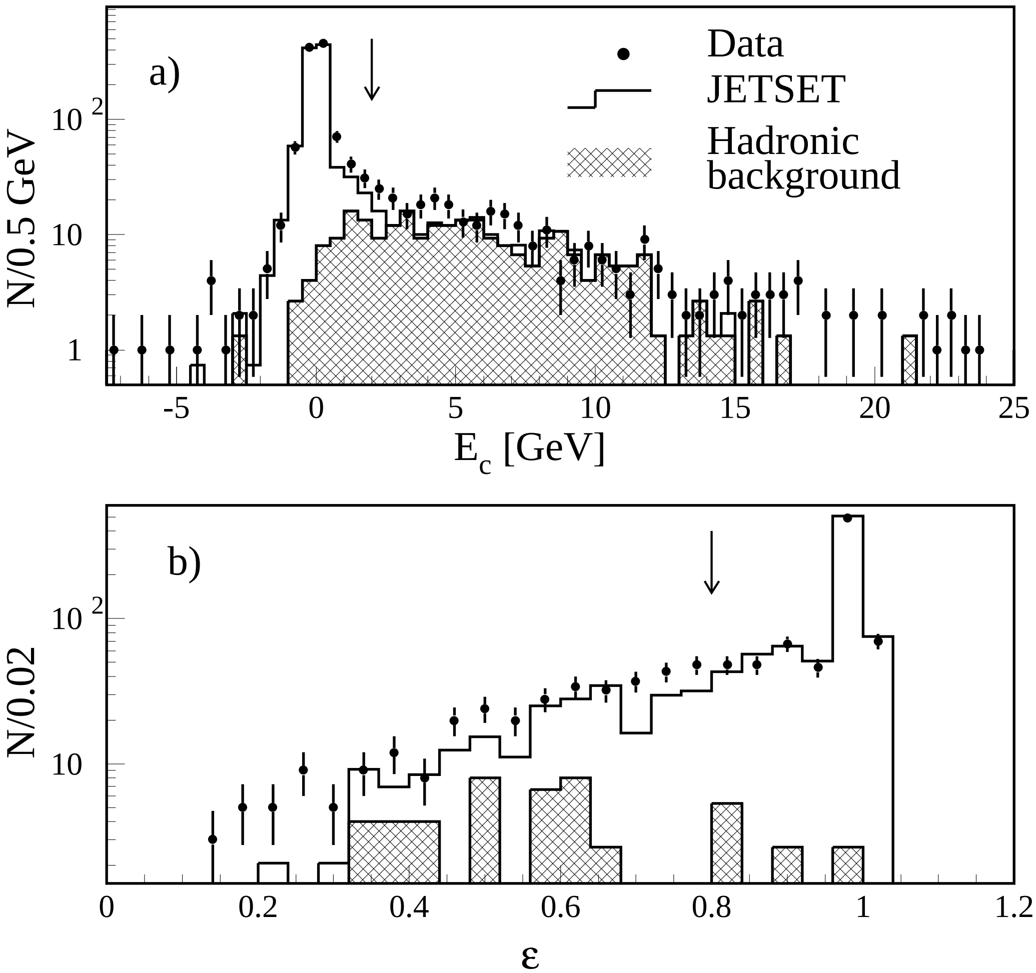
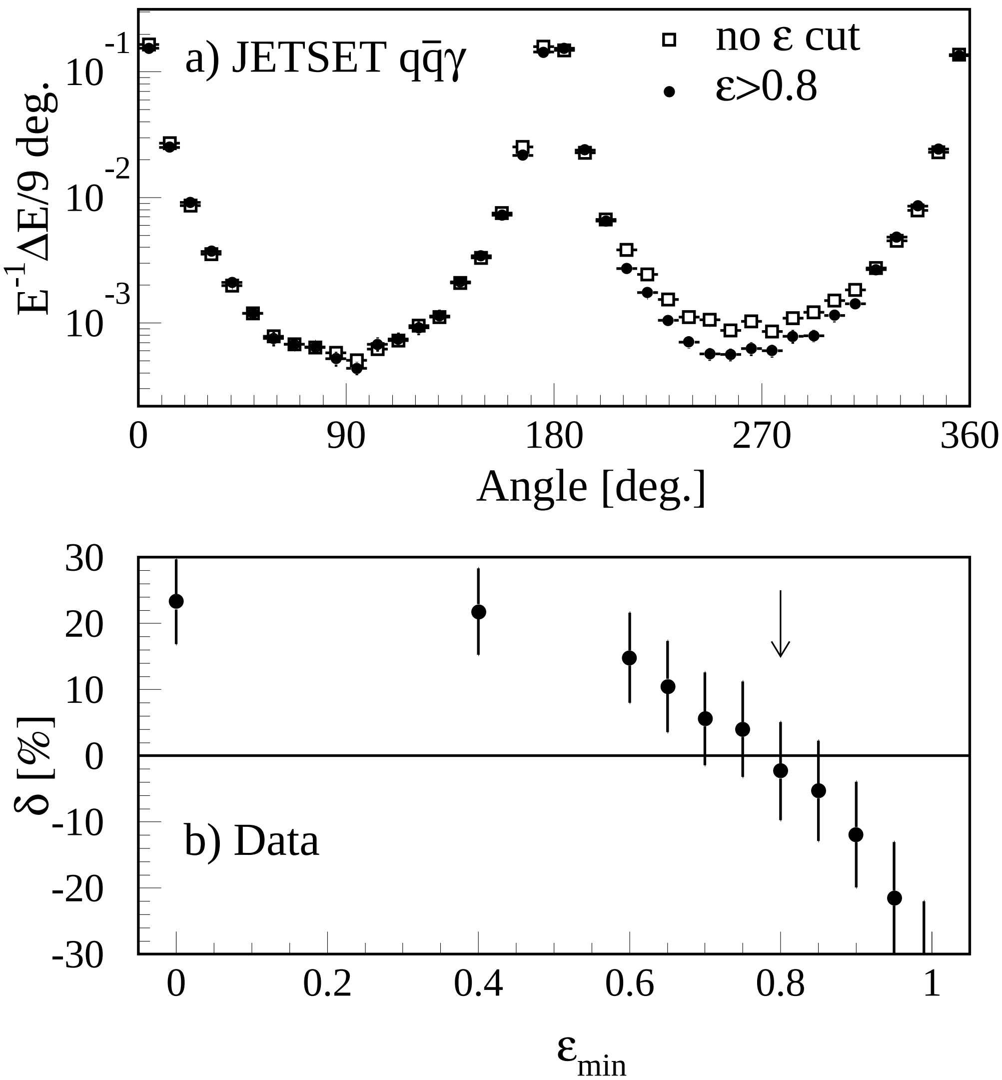


E_c ε $|E_c| <$

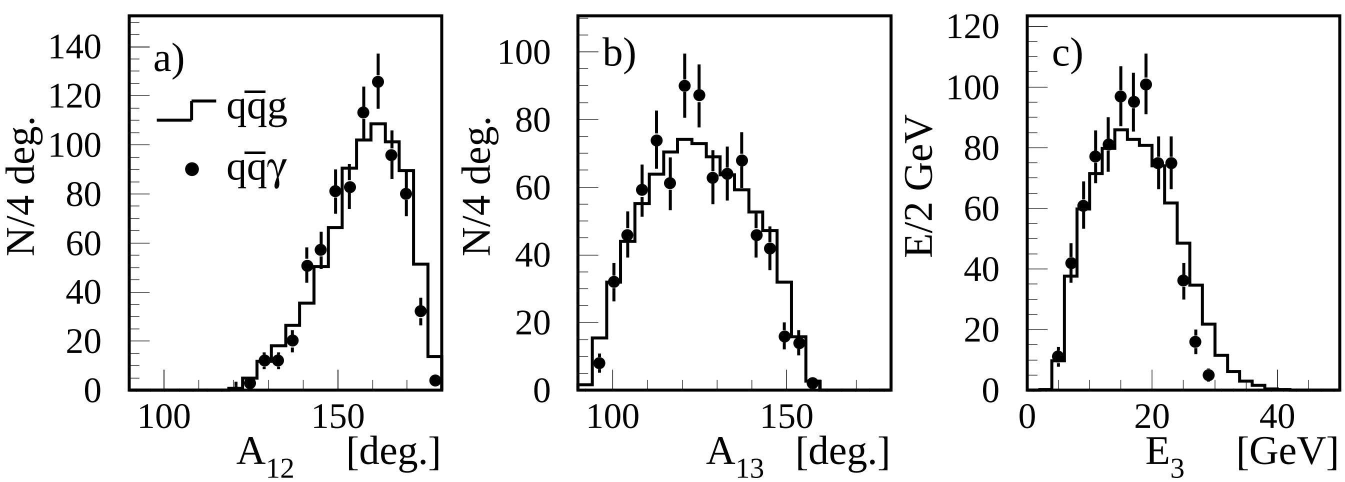


γ $^\circ$

E_c δ

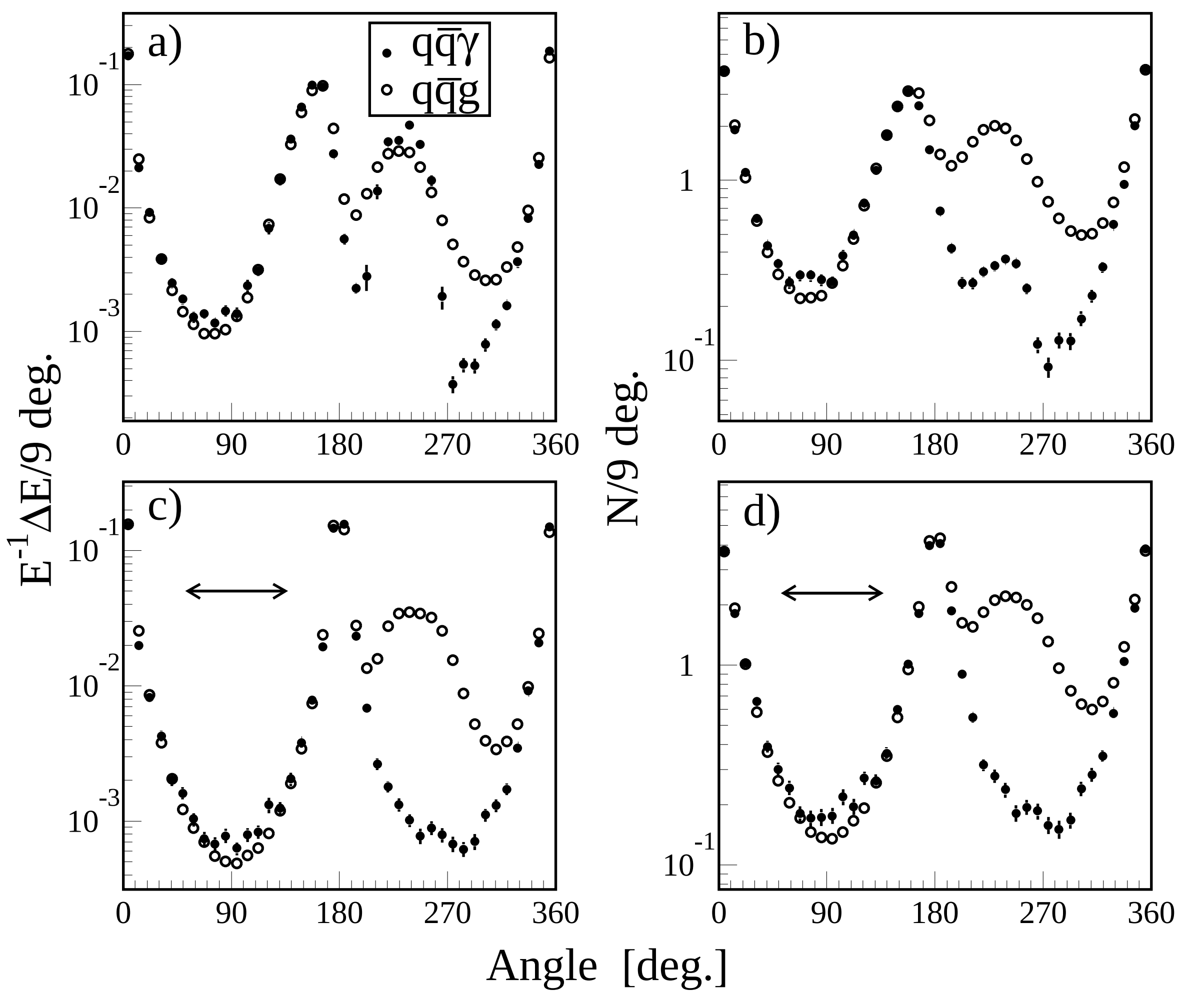
$^\circ$, $^\circ$ $^\circ$, $^\circ$

ε

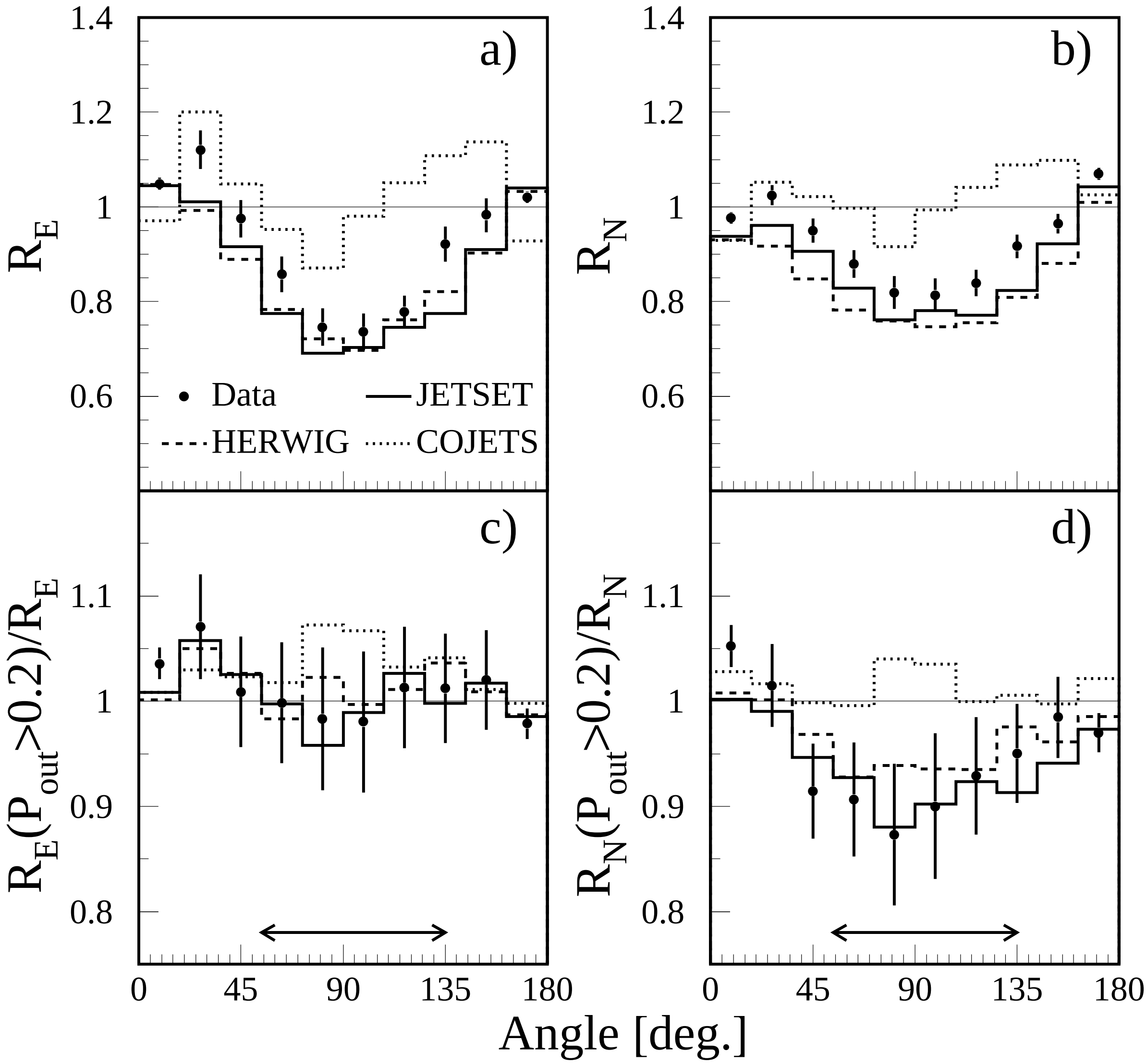


A_{12}

A_{13} E_3



a)
b)
c)
d)
$q\bar{q}\gamma$
$q\bar{q}g$
$E^{-1}\Delta E/9$ deg.
N/9 deg.
Angle [deg.]
10^{-1}
10^{-2}
10^{-3}
1
0
90
180
270
360



γ

γ

P_{out}