$\psi(4040)$ REFERENCES

BRANDELIK	78C	PL 76B 361	+Cords+	(DASP Collab.)
Also	79C	ZPHY C1 233	Brandelik, Cords+	(DASP Collab.)
FELDMAN	77	PRPL 33C 285	+Perl	(LBL, SLAC)
GOLDHABER	77	PL 69B 503	+Wiss, Abrams, Alam+	(LBL, SLAC)

OTHER RELATED PAPERS

HEIKKILA	84	PR D29 110	+Tornqvist, Ono	(HELS, AACHT)
ONO	84	ZPHY C26 307		(ORSAY)
SIEGRIST	82	PR D26 969	+Schwitters, Alam, Chinowsky+	(SLAC, LBL)
AUGUSTIN	75	PRL 34 764	+Boyarski, Abrams, Briggs+	(SLAC, LBL)
BACCI	75	PL 58B 481	+Bidoli, Penso, Stella+	(ROMA, FRAS)
BOYARSKI	75B	PRL 34 762	+Breidenbach, Abrams, Briggs+	(SLAC, LBL)
ESPOSITO	75	PL 58B 478	+Felicetti, Peruzzi+	(FRAS, NAPL, PADO, ROMA)

$\psi(4160)$

$I^G(J^{PC}) = ?^?(1^{--})$

J^{PC} for the $\psi(4160)$ is known by its production in e^+e^- collisions via single-photon annihilation. I^G is not known, and the interpretation of this state as a single resonance is unclear because of the expectation of substantial threshold effects in this energy region.

$\psi(4160)$ MASS

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
4159.0±20.0	BRANDELIK	78C	DASP	e^+e^-

$\psi(4160)$ WIDTH

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
78.0±20.0	BRANDELIK	78C	DASP	e^+e^-

$\psi(4160)$ DECAY MODES

	Mode	Fraction (Γ_i/Γ)
Γ_1	e^+e^-	$(10\pm4)\times10^{-6}$

$\psi(4160)$ PARTIAL WIDTHS

$\Gamma(e^+e^-)$ Γ_1

VALUE (keV)	DOCUMENT ID		TECN	COMMENT
0.77±0.23	BRANDELIK	78C	DASP	e^+e^-

$\psi(4160)$ REFERENCES

BRANDELIK	78C	PL 76B 361	+Cords+	(DASP Collab.)

OTHER RELATED PAPERS

ONO	84	ZPHY C26 307		(ORSAY)
KIRKBY	79B	Fermilab Symp. 107		(SLAC)
BURMESTER	77	PL 66B 395	+Criegee+	(DESY, HAMB, SIEG, WUPP)

$\psi(4415)$

$I^G(J^{PC}) = ?^?(1^{--})$

J^{PC} for the $\psi(4415)$ is known by its production in e^+e^- collisions via single-photon annihilation. I^G is not known, and the interpretation of this state as a single resonance is unclear because of the expectation of substantial threshold effects in this energy region.

$\psi(4415)$ MASS

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
4415 ± 6 OUR AVERAGE				
4417.0±10.0	BRANDELIK	78C	DASP	e^+e^-
4414 ± 7	SIEGRIST	76	MRK1	e^+e^-
• • • We do not use the following data for averages, fits, limits, etc. • • •				
~ 4400	KNIES	77	PLUT	$e^+e^- \to \mu^+\mu^-$

$\psi(4415)$ WIDTH

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
43 ±15 OUR AVERAGE Error includes scale factor of 1.8.				
66.0±15.0	BRANDELIK	78C	DASP	e^+e^-
33 ±10	SIEGRIST	76	MRK1	e^+e^-

$\psi(4415)$ DECAY MODES

	Mode	Fraction (Γ_i/Γ)
Γ_1	hadrons	dominant
Γ_2	e^+e^-	$(1.1\pm0.4)\times10^{-5}$

$\psi(4415)$ PARTIAL WIDTHS

$\Gamma(e^+e^-)$ Γ_2

VALUE (keV)	DOCUMENT ID		TECN	COMMENT
0.47±0.10 OUR AVERAGE				
0.49±0.13	BRANDELIK	78C	DASP	e^+e^-
0.44±0.14	SIEGRIST	76	MRK1	e^+e^-

$\psi(4415)$ BRANCHING RATIOS

$\Gamma(\text{hadrons})/\Gamma_{\text{total}}$ Γ_1/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
dominant	SIEGRIST	76	MRK1	e^+e^-

$\psi(4415)$ REFERENCES

BRANDELIK	78C	PL 76B 361	+Cords+	(DASP Collab.)
KNIES	77	Hamburg Symp. 93		(PLUTO Collab.)
SIEGRIST	76	PRL 36 700	+Abrams, Boyarski, Breidenbach+	(LBL, SLAC)

OTHER RELATED PAPERS

BURMESTER	77	PL 66B 395	+Criegee+	(DESY, HAMB, SIEG, WUPP)
LUTH	77	PL 70B 120	+Pierre, Abrams, Alam, Boyarski+	(LBL, SLAC)