

$B_J^*(5732)$ or B^{**}

$$I(J^P) = ?(??)$$

I, J, P need confirmation.

OMITTED FROM SUMMARY TABLE

Signal can be interpreted as stemming from several narrow and broad resonances. Needs confirmation.

 $B_J^*(5732)$ MASS

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
5698 ± 8 OUR AVERAGE	Error includes scale factor of 1.2.			
5710 ± 20		¹ AFFOLDER	01F CDF	$p\bar{p}$ at 1.8 TeV
5695 ⁺¹⁷ ₋₁₉		² BARATE	98L ALEP	$e^+e^- \rightarrow Z$
5704 ± 4 ± 10	1944	³ BUSKULIC	96D ALEP	$E_{cm}^{ee} = 88-94$ GeV
5732 ± 5 ± 20	2157	ABREU	95B DLPH	$E_{cm}^{ee} = 88-94$ GeV
5681 ± 11	1738	AKERS	95E OPAL	$E_{cm}^{ee} = 88-94$ GeV

• • • We do not use the following data for averages, fits, limits, etc. • • •

5713 ± 2		⁴ ACCIARRI	99N L3	$e^+e^- \rightarrow Z$
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¹ AFFOLDER 01F uses the reconstructed B meson through semileptonic decay channels. The fraction of light B mesons that are produced at $L=1$ B^{**} states is measured to be $0.28 \pm 0.06 \pm 0.03$.

² BARATE 98L uses fully reconstructed B mesons to search for B^{**} production in the $B\pi^\pm$ system. In the framework of heavy quark symmetry (HQS), they also measured the mass of B_2^* to be 5739^{+8+6}_{-11-4} MeV/ c^2 and the relative production rate of $B(b \rightarrow B_2^* \rightarrow B^{(*)}\pi)/B(b \rightarrow B_{u,d}) = (31 \pm 9^{+6}_{-5})\%$.

³ Using $m_{B\pi} - m_B = 424 \pm 4 \pm 10$ MeV.

⁴ ACCIARRI 99N uses inclusive reconstructed B mesons to search for B^{**} production in the $B^{(*)}\pi^\pm$ system. In the framework of HQET, they measured the mass of B_1^* and B_2^* to be $5670 \pm 10 \pm 13$ MeV and $5768 \pm 5 \pm 6$ with the $B(b \rightarrow B^{**}) = (32 \pm 3 \pm 6) \times 10^{-2}$. They also reported the evidence for the existence of an excited B -meson state or mixture of states in the region 5.9–6.0 GeV.

 $B_J^*(5732)$ WIDTH

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
128 ± 18 OUR AVERAGE				
145 ± 28	2157	ABREU	95B DLPH	$E_{cm}^{ee} = 88-94$ GeV
116 ± 24	1738	AKERS	95E OPAL	$E_{cm}^{ee} = 88-94$ GeV

 $B_J^*(5732)$ DECAY MODES

Mode	Fraction (Γ_i/Γ)
Γ_1 $B^*\pi + B\pi$	dominant
Γ_2 $B^*\pi(X)$	[a] $(85 \pm 29)\%$

[a] X refers to decay modes with or without additional accompanying decay particles.

$B_J^*(5732)$ BRANCHING RATIOS

X refers to decay modes with or without additional accompanying decay particles.

$\Gamma(B^* \pi(X))/\Gamma_{\text{total}}$				Γ_2/Γ
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
$0.85^{+0.26}_{-0.27} \pm 0.12$	ABBIENDI	02E OPAL	$e^+ e^- \rightarrow Z$	

$B_J^*(5732)$ REFERENCES

ABBIENDI	02E	EPJ C23 437	G. Abbiendi <i>et al.</i>	(OPAL Collab.)
AFFOLDER	01F	PR D64 072002	T. Affolder <i>et al.</i>	(CDF Collab.)
ACCIARRI	99N	PL B465 323	M. Acciarri <i>et al.</i>	(L3 Collab.)
BARATE	98L	PL B425 215	R. Barate <i>et al.</i>	(ALEPH Collab.)
BUSKULIC	96D	ZPHY C69 393	D. Buskulic <i>et al.</i>	(ALEPH Collab.)
ABREU	95B	PL B345 598	P. Abreu <i>et al.</i>	(DELPHI Collab.)
AKERS	95E	ZPHY C66 19	R. Akers <i>et al.</i>	(OPAL Collab.)