		,,,,	
<i>B</i> <sub>J</sub> (5970)	· ·	$(P) = \frac{1}{2}(??)$ , <i>P</i> need co	
Quantum number	rs shown are quark-mo	odel predictio	ns.
	<i>В</i> Ј(5970) МА	ASS	
<b>B</b> (5970) <sup>+</sup> MASS OUR FIT uses m <sub>B<sup>0</sup></sub> a <u>VALUE (MeV)</u> 5965±5 OUR FIT	nd m <sub>BJ</sub> (5970) <sup>+ - m</sup> E <u>DOCUMENT ID</u>	<sub>90</sub> to determin	e m <sub>Bj</sub> (5970) <sup>+.</sup>
$m_{B_{J}(5970)^{+}} - m_{B^{0}}$			
VALUE (MeV) EV   685 ±5 OUR FIT	TS DOCUMENT ID	TECN	COMMENT
$685 \pm 5$ OUR AVERAGE			
	2k <sup>1</sup> AAIJ	15AB LHCB	<i>pp</i> at 7, 8 TeV
$681 \pm 5 \pm 12$ 1.4	4k <sup>2</sup> AALTONEN	14ı CDF	pp at 1.96 TeV
$\bullet \bullet \bullet$ We do not use the following	lowing data for average	es, fits, limits,	etc. ● ● ●
686.8±4.5± 2.5	2k <sup>3</sup> AAIJ	15AB LHCB	<i>pp</i> at 7, 8 TeV
$^1$ AAIJ 15AB reports [ $m_{B^+}$	$[-m_{D0}] - m_{+} = 54$	$45.8 \pm 4.1 \pm 2.1$	5 MeV which we adjust by
in the fit for mass difference of 2 AALTONEN 141 reports adjusted by the $\pi^+$ mass 3 AAIJ 15AB reports $[m_B^-$ the $\pi^+$ mass. The mass	ence. ${}^{m}B_{J}(5970)^{+} - {}^{m}B^{0}$ - s. ${}^{+}_{J} - {}^{m}B^{0}] - {}^{m}\pi^{+} =$ res inside the square bra	$m_{\pi^+} = 541$ $547 \pm 5 \pm 3$	
in the fit for mass differe	ence.		
$m_{B_{J}(5970)^{+}} - m_{B^{*0}}$			
VALUE (MeV) EV			COMMENT
• • We do not use the fol			
686.0±4.0±2.5	2k <sup>1</sup> AAIJ	15AB LHCB	<i>pp</i> at 7, 8 TeV
$^1$ AAIJ 15AB reports [ $m_{B_J^+}$	$[-m_{B^0}] - (m_{B^{*+}} - m_{B^0})$	$(m_{B^+}) - m_{\pi^+}$	$= 547 \pm 4 \pm 3$ MeV which
we adjust by the $\pi^+$ m each candidate event. T $m_{B^+})=45.01\pm0.30$ in the fit for mass different	he result assumes $P=\pm$ 0.23 MeV, and uses	the square br $-(-1)^J$ , $(m_E$ three relativist	tackets were measured for $m_{B^{*0}} - m_{B^0}) = (m_{B^{*+}} - m_{B^0})$ ic Breit-Wigner functions
<b>B</b> ر <b>(5970)<sup>0</sup> MASS</b> OUR FIT uses m <sub>B+</sub> a	and $m_{B_j(5970)^0} - m_E$	$_{3^+}$ to determir	ne m <sub>Bj</sub> (5970) <sup>0.</sup>

VALUE (MeV) 5971±5 OUR FIT

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$m_{B_{J}(5970)^{0}} - m_{B^{+}}$						
VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT		
691 ±5 OUR FIT						
$691 \pm 5  \text{OUR AVER}$		1				
$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	10k 2.6k	<sup>1</sup> AAIJ <sup>2</sup> AALTONEN		рраt 7, 8 ТеV р <del>р</del> аt 1.96 ТеV		
• • • We do not use the	-					
$714.3 \pm 6.4 \pm 5.1$	10k	<sup>3</sup> AAIJ		<i>pp</i> at 7, 8 TeV		
	5			1 MeV which we adjust by		
event. The result a in the fit for mass o	ssumes <i>P</i> lifference.	$= (-1)^J$ and uses	s two relativis	asured for each candidate tic Breit-Wigner functions $\pm$ 5 $\pm$ 12 MeV which we		
	5	(5970) <sup>2</sup> D <sup>2</sup>	71			
	adjusted by the $\pi^-$ mass. <sup>3</sup> AAIJ 15AB reports $[m_{B^0_{~I}} - m_{B^+}] - m_{\pi^-} = 575 \pm 6 \pm 5$ MeV which we adjust by					
the $\pi^-$ mass. The masses inside the square brackets were measured for each candidate event. The result assumes $P = (-1)^J$ and uses three relativistic Breit-Wigner functions in the fit for mass difference.						
<sup>m</sup> B <sub>J</sub> (5970) <sup>0</sup> − <sup>m</sup> B <sup>*†</sup>						
VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT		
• • • We do not use t	ne followir	ng data for averages	s, fits, limits,	etc. • • •		
$691.6 \!\pm\! 3.7 \!\pm\! 5.1$	10k	<sup>1</sup> AAIJ	15AB LHCB	<i>pp</i> at 7, 8 TeV		
$^1$ AAIJ 15AB reports $[m_{B^0_{~I}} - m_{B^+}] - (m_{B^{*+}} - m_{B^+}) - m_{\pi^-} = 552 \pm 4 \pm 5$ MeV						
				re brackets were measured		
				$(m_{B^{*+}} - m_{B^+}) = 45.01 \pm$		
0.30 $\pm$ 0.23 MeV, difference.	and uses t	hree relativistic Br	eit-Wigner fu	nctions in the fit for mass		

## B<sub>J</sub>(5970) WIDTH

BJ(5970) <sup>+</sup> WIDTH				
VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
62±20 OUR AVERAGE				
$63 \!\pm\! 15 \!\pm\! 17$	2k	<sup>1</sup> AAIJ	15AB LHCB	<i>pp</i> at 7, 8 TeV
$60^{+30}_{-20}\pm40$	1.4k	AALTONEN	14I CDF	<i>р</i> <b>р</b> at 1.96 ТеV
• • • We do not use th	e following	g data for averages	s, fits, limits,	etc. • • •
$61\!\pm\!14\!\pm\!17$	2k	<sup>2</sup> AAIJ	15AB LHCB	<i>pp</i> at 7, 8 TeV
$61\!\pm\!15\!\pm\!17$	2k	<sup>3</sup> AAIJ	15AB LHCB	<i>pp</i> at 7, 8 TeV
1	7			

<sup>1</sup>Assuming  $P = (-1)^J$  and using two relativistic Breit-Wigner functions in the fit for mass

difference. <sup>2</sup> Assuming  $P = (-1)^J$  and using two relativistic Breit-Wigner functions in the fit for mass difference. <sup>3</sup> Assuming  $P = -(-1)^J$  and using three relativistic Breit-Wigner functions in the fit for mass difference.

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BJ(5970) <sup>0</sup> WIDTH)ر <i>B</i>				
VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
$81\pm12$ OUR AVERAGE				
$82\pm$ $8\pm$ 9	10k	<sup>1</sup> AAIJ	15AB LHCB	<i>pp</i> at 7, 8 TeV
$70^{+30}_{-20}\pm30$	2.6k	AALTONEN	14I CDF	<i>р</i> <del>р</del> ат 1.96 ТеV
• • • We do not use the	ne following	g data for average	s, fits, limits,	etc. ● ● ●
$56\pm$ $7\pm$ $9$	10k	<sup>2</sup> AAIJ	15AB LHCB	<i>pp</i> at 7, 8 TeV
$82{\pm}10{\pm}9$	10k	<sup>3</sup> AAIJ	15AB LHCB	<i>pp</i> at 7, 8 TeV
-	7			

<sup>1</sup>Assuming  $P = (-1)^J$  and using two relativistic Breit-Wigner functions in the fit for mass difference. <sup>2</sup>Assuming  $P = (-1)^J$  and using three relativistic Breit-Wigner functions in the fit for

mass difference. <sup>3</sup>Assuming  $P = -(-1)^J$  and using three relativistic Breit-Wigner functions in the fit for mass difference.

## B<sub>J</sub>(5970) DECAY MODES

	Mode	Fraction $(\Gamma_i/\Gamma)$
Γ <sub>1</sub> Γ <sub>2</sub>	$B\pi B^*\pi$	possibly seen seen

## **B**<sub>J</sub>(5970) BRANCHING RATIOS

$\Gamma(B\pi)/\Gamma_{total}$					$\Gamma_1/\Gamma$
VALUE	EVTS	DOCUMENT ID	TECN	CHG	COMMENT
possibly seen	2k	<sup>1</sup> AAIJ	15AB LHCB	±	<i>pp</i> at 7, 8 TeV
possibly seen	10k	<sup>1</sup> AAIJ	15AB LHCB	0	<i>pp</i> at 7, 8 TeV
possibly seen	2.6k	AALTONEN	14I CDF	0	<i>р р</i> ат 1.96 ТеV
possibly seen	1.4k	AALTONEN	14I CDF	$\pm$	<i>р<mark>р</mark> at 1.96 ТеV</i>
1		7			

<sup>1</sup>A  $B\pi$  decay is forbidden from a  $P = -(-1)^J$  parent, whereas  $B^*\pi$  is allowed.

$\Gamma(B^*\pi)/\Gamma_{ ext{total}}$					Γ2/Γ
VALUE	<u>EVTS</u>	DOCUMENT ID	TE	ECN <u>CHG</u>	COMMENT
seen	10k	AAIJ	15AB LH	HCB 0	<i>pp</i> at 7, 8 TeV
seen	2k	AAIJ	15ab LH	HCB $\pm$	<i>pp</i> at 7, 8 TeV
seen	2.6k	AALTONEN	141 CE	DF 0	<i>р<mark>р</mark> at 1.96 ТеV</i>
seen	1.4k	AALTONEN	14I CE	DF $\pm$	<i>р</i> <del>р</del> ат 1.96 ТеV

## B<sub>J</sub>(5970) REFERENCES

AAIJ 15AB JHEP 1504 024 R. Aaij et al.   AALTONEN 14I PR D90 012013 T. Aaltonen et al.	(LHCb Collab.) (CDF Collab.)
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