

**X(4140)**

$$I^G(J^{PC}) = 0^+(?^{?+})$$

## OMITTED FROM SUMMARY TABLE

Needs confirmation.

Seen by AALTONEN 09AH and ABAZOV 14A in the  $B^+ \rightarrow X K^+$ ,  
 $X \rightarrow J/\psi \phi$ . Not seen by SHEN 10 in  $\gamma\gamma \rightarrow J/\psi \phi$  or AAIJ 12AA  
in  $B^+ \rightarrow J/\psi \phi K^+$ .**X(4140) MASS**

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
$4159.0 \pm 4.3 \pm 6.6$	$52 \pm 19$	<sup>1</sup> ABAZOV	14A D0	$B^+ \rightarrow J/\psi \phi K^+$
$4143.0 \pm 2.9 \pm 1.2$	$14 \pm 5$	<sup>2</sup> AALTONEN	09AH CDF	$B^+ \rightarrow J/\psi \phi K^+$
<sup>1</sup> Statistical significance of 3.1 $\sigma$ .				
<sup>2</sup> Statistical significance of 3.8 $\sigma$ .				

**X(4140) WIDTH**

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
$20 \pm 13 \begin{smallmatrix} +3 \\ -8 \end{smallmatrix}$	$52 \pm 19$	<sup>3</sup> ABAZOV	14A D0	$B^+ \rightarrow J/\psi \phi K^+$
$11.7 \begin{smallmatrix} + \\ - \end{smallmatrix} \begin{smallmatrix} 8.3 \\ 5.0 \end{smallmatrix} \pm 3.7$	$14 \pm 5$	<sup>4</sup> AALTONEN	09AH CDF	$B^+ \rightarrow J/\psi \phi K^+$
<sup>3</sup> Statistical significance of 3.1 $\sigma$ .				
<sup>4</sup> Statistical significance of 3.8 $\sigma$ .				

**X(4140) DECAY MODES**

Mode	Fraction ( $\Gamma_i/\Gamma$ )
$\Gamma_1 \quad J/\psi \phi$	not seen
$\Gamma_2 \quad \gamma\gamma$	not seen

**X(4140)  $\Gamma(i)\Gamma(\gamma\gamma)/\Gamma(\text{total})$** 

$\Gamma(\gamma\gamma) \times \Gamma(J/\psi \phi)/\Gamma_{\text{total}}$					$\Gamma_2 \Gamma_1/\Gamma$
VALUE (eV)	CL%	DOCUMENT ID	TECN	COMMENT	
<b>&lt;41</b>	90	<sup>5</sup> SHEN	10	BELL	$10.6 e^+ e^- \rightarrow e^+ e^- J/\psi \phi$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●					
< 6	90	<sup>6</sup> SHEN	10	BELL	$10.6 e^+ e^- \rightarrow e^+ e^- J/\psi \phi$
<sup>5</sup> For $J^P = 0^+$ .					
<sup>6</sup> For $J^P = 2^+$ .					

## X(4140) BRANCHING RATIOS

$\Gamma(J/\psi\phi)/\Gamma_{\text{total}}$					$\Gamma_1/\Gamma$
VALUE	EVTS	DOCUMENT ID	TECN	COMMENT	
<b>not seen</b>		<sup>7</sup> AAIJ	12AA LHCb	$pp \rightarrow B^+ X$ at 7 TeV	
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●					
seen	$52 \pm 19$	<sup>8</sup> ABAZOV	14A D0	$B^+ \rightarrow J/\psi\phi K^+$	
seen	$14 \pm 5$	<sup>9</sup> AALTONEN	09AH CDF	$B^+ \rightarrow J/\psi\phi K^+$	
<sup>7</sup> Reported $B(B^+ \rightarrow X(4140)K^+) \cdot B(X(4140) \rightarrow J/\psi\phi)/B(B^+ \rightarrow J/\psi\phi K^+) < 0.07$ at 90% CL.					
<sup>8</sup> ABAZOV 14A reports $B(B^+ \rightarrow X(4140)K^+ \rightarrow J/\psi\phi K^+)/B(B^+ \rightarrow J/\psi\phi K^+) = (19 \pm 7 \pm 4)\%$ with $3.1 \sigma$ significance.					
<sup>9</sup> Statistical significance of $3.8 \sigma$ .					

$\Gamma(\gamma\gamma)/\Gamma_{\text{total}}$					$\Gamma_2/\Gamma$
VALUE		DOCUMENT ID	TECN	COMMENT	
<b>not seen</b>		SHEN	10 BELL	$10.6 e^+ e^- \rightarrow e^+ e^- J/\psi\phi$	

## X(4140) REFERENCES

ABAZOV	14A	PR D89 012004	V.M. Abazov <i>et al.</i>	(D0 Collab.)
AAIJ	12AA	PR D85 091103	R. Aaij <i>et al.</i>	(LHCb Collab.)
SHEN	10	PRL 104 112004	C.P. Shen <i>et al.</i>	(BELLE Collab.)
AALTONEN	09AH	PRL 102 242002	T. Aaltonen <i>et al.</i>	(CDF Collab.)