						NODE=M206
$\chi$ (3P)		I <sup>G</sup> (	$J^{PC}) = 0^{+1}$	+(1 + +)		
$\chi_{b1}(3^{\prime})$		J ne	eds confirm	nation.		
Observed in t	the radiativ	ve decay to $\Upsilon(1)$	S. 2S. 3S). th	erefore $C = +$ .		
		(	-, -,,			
$\chi_{b1}(3P)$ MASS						NODE=M206M
			-	601 / J / J / J		
VALUE (MeV)	<u>EVIS</u>	1 CIDUNIXANI	) <u>TECN</u>	_ COMMENT	- V	NODE=M206M
$\bullet \bullet \bullet We do not use the$	<b>e</b> following	data for average	s. fits. limits. e	$pp \rightarrow \gamma \mu \cdot \mu$	<i>x</i>	
105157 + 2.2 + 1.5	160	2	140011101		- v	
10515.7 - 3.9 - 2.1	109		14BG LHCE	$p p \rightarrow \gamma \mu \cdot \mu$	~ 	
$10512.1 \pm 2.1 \pm 0.9$ $10511.3 \pm 1.7 \pm 2.5$	351	<sup>3</sup> ΑΑΙ J 4 ΔΔΙ Ι	14BG LHCE	$ p p \rightarrow \gamma \mu^+ \mu $	- X - X	OCCUR=2
$10511.5 \pm 1.7 \pm 2.5$ $10530 \pm 5 \pm 9$	102	<sup>5</sup> AAD	12A ATLS	$\begin{array}{ccc} p p & \gamma \mu & \mu \\ 5 & p p \rightarrow \gamma \mu^+ \mu \end{array}$	-x	
$10551 \pm 14 \pm 17$		<sup>5</sup> ABAZOV	12Q D0	$p \overline{p} \rightarrow \gamma \mu^+ \mu$	- <i>x</i>	
<sup>1</sup> Systematic error inc Also measures $m_{\chi_{b1}}$ $\chi_{b1}(3P)$ and $\chi_{b2}(3P)$ <sup>2</sup> From $\chi_{b1}(3P) \rightarrow$	$\begin{array}{l} \text{(ludes an ad}\\ \text{(3P)} &= n\\ \text{(3P)} &\text{(3P)} \\ \text{(3P)} &\text{(sents)}\\ \mathcal{T}(15, 25) \\ \end{array}$	ditional 0.5 MeV $n_{\chi_{b1}(3P)} = 10.6$ was observed.	for the uncertain $0 \pm 0.64 \pm 0$	ainty on the $\Upsilon(35)$ 0.17 MeV. A total	5) mass. of 372	NODE=M206M;LINKAGE=D
1.5 MeV and allowing for $\pm 30\%$ variation in the $\chi_{b2}(3P) = m\chi_{b1}(3P) = 10.3 \pm 1.5$ that of $\chi_{b1}(3P)$ .						NODE=M206M;LINKAGE=A
<sup>3</sup> The mass of the $\chi_{b1}(3P)$ state obtained by combining the results of AAIJ 14BG with that of AAIJ 14BI. The first uncertainty is experimental and the second attributable to the unknown mass splitting, assumed to be $m_{\chi_{b2}(3P)} - m_{\chi_{b1}(3P)} = 10.5 \pm 1.5$ MeV.						NODE=M206M;LINKAGE=B
<sup>4</sup> From $\chi_{b1}(3P) \rightarrow$	$\gamma(3S)\gamma$ tr	ansition assuming	; $m_{\chi_{b2}}(3P)$ –	$m_{\chi_{b1}(3P)} = 10.$	$5\pm1.5$	NODE=M206M;LINKAGE=C
<sup>5</sup> The mass barycente	er of the me	erged lineshapes f	rom the $J = 1$	and 2 states.		NODE=M206M;LINKAGE=AA
-						
	Χы	(3P) DECAY I	MODES			NODE=M206215;NODE=M206
Mode			Fraction $(\Gamma_i/I)$	Γ)		
$\Gamma_1 \qquad \Upsilon(1S)\gamma$	seen					DESIG=1
$\Gamma_2 \qquad \Upsilon(2S)\gamma$	seen					DESIG=2
$\Gamma_3 \qquad \Upsilon(3S)\gamma$			seen			DESIG=3
	~ (3)					
	X 61 (31	) BRANCHIN	GIATIOS			NODE=M206225
$\Gamma(\Upsilon(1S)\gamma)/\Gamma_{total}$					Γ1/Γ	NODE=M206R01
VALUE	<u>EVTS</u>	DOCUMENT ID	<u>TECN</u>	<u>COMMENT</u>		NODE=M206R01
• ● ● We do not use th	169 ne following	* AAIJ data for average	14BG LHCB s. fits. limits. (	$pp \rightarrow \gamma \mu \cdot \mu$ etc. • • •	X	
seen		AAD	12A ATLS	$pp \rightarrow \gamma u^+ u^-$	x	
seen		ABAZOV	12Q D0	$p\overline{p} \rightarrow \gamma \mu^+ \mu^-$	X	
<sup>1</sup> From $\chi_{b1}(3P) \rightarrow T$ MeV and allowing the of $\chi_{b1}(3P)$ .	$\Upsilon(1{ m S},2{ m S})\gamma$ for $\pm 30\%$ v	transitions assum variation in the $\chi$	ing $m_{\chi_{b2}}(3P)$ $_{b2}(3P)$ produce	$-m_{\chi_{b1}(3P)} = 10$ ction rate relative	$0.5\pm1.5$ to that	NODE=M206R01;LINKAGE=A
$\Gamma(\Upsilon(2S)\gamma)/\Gamma_{\text{total}}$ $\Gamma_2/\Gamma$						NODE=M206R02
VALUE	<u>EVTS</u>	DOCUMENT ID	<u>TECN</u>	COMMENT		NODE=M206R02
seen	169		14BG LHCB	$pp \rightarrow \gamma \mu^+ \mu^-$	X	
• • • vve do not use th	ie tollowing	uata for average	104 ATLC		v	
	$\gamma(15, 25)$	AAD		$pp \rightarrow \gamma \mu \cdot \mu$ $m = 10$		
MeV and allowing to $\chi_{b1}(3P) \rightarrow 0$ of $\chi_{b1}(3P)$ .	for $\pm 30\%$ v	variation in the $\chi$	$_{b2}^{\text{mg m}}(3P)$ produce	$-m_{\chi_{b1}}(3P) - \infty$ ction rate relative	to that	NODE=M206R02;LINKAGE=A
$\Gamma(\Upsilon(3S)\gamma)/\Gamma_{total}$					Г <sub>3</sub> /Г	NODE=M206R03
VALUE	EVTS	DOCUMENT ID	<u>TECN</u>	COMMENT		NODE=M206R03
seen	100	SIRUNYAN	18N CMS	$pp \rightarrow \gamma \mu^+ \mu^-$	X	
Seef1	102	AAIJ	14BI LHCB	$pp \rightarrow \gamma \mu \cdot \mu$	^	

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NODE=M206

REFID=58873 REFID=56199 REFID=56235 REFID=54037 REFID=54264

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AAIJ	14BI	EPJ C74 3092	R. Aaij <i>et al.</i>	(LHCb Collab.)
AAD	12A	PRL 108 152001	G. Aad <i>et al.</i>	(ATLAS Collab.)
ARAZOV	120	PR 086 031102	V.M. Abazwa <i>et al.</i>	(CDC Collab.)
ABAZOV	12Q	PR D86 031103	V.M. Abazov et al.	(D0 Collab.)