Reference = AAIJ 14BI; EPJ C74 3092
Verifier code = LHCB

Normally we send all verifications for one experiment to one person, usually the spokesperson or data-analysis co-ordinator, who then distributes them to the appropriate people. Please tell us if we should send the verifications for your experiment to someone else.

PLEASE READ NOW

PLEASE REPLY WITHIN ONE WEEK

Vincenzo Vagnoni

EMAIL: vincenzo.vagnoni@bo.infn.it

July 21, 2016

Dear Colleague,

(1) Please check the results of your experiment carefully. They are marked.

(2) Please reply within one week.

(3) Please reply even if everything is correct.

(4) IMPORTANT!! Please tell WHICH papers you are verifying. We have lots of requests out.

(5) Feel free to make comments on our treatment of any of the results (not just yours) you see.

Thank you for helping us make the Review accurate and useful.

Sincerely,

Simon Eidelman
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Prospekt Lavrent'eva 11
RU-630090 Novosibirsk
Russian Federation

EMAIL: simon.eidelman@cern.ch

$b\overline{b}$ MESONS

NODE=MXXX030

NODE=M206

$\chi_{b1}(3P)$

$I^G(J^{PC}) = 0^+(1^{++})$

Observed in the radiative decay to $\Upsilon(1S, 2S, 3S)$, therefore $C = +$.
J needs confirmation.

NODE=M206

$\chi_{b1}(3P)$ MASS

NODE=M206M

	VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
	10512.1± 2.1± 0.9	351	[1] AAIJ	14BG	LHCB	$pp \to \gamma\mu^+\mu^- X$
	• • • We do not use the following data for averages, fits, limits, etc. • • •					
	$10515.7^{+2.2}_{-3.9}{}^{+1.5}_{-2.1}$	169	[2] AAIJ	14BG	LHCB	$pp \to \gamma\mu^+\mu^- X$
YOUR DATA	10511.3± 1.7± 2.5	182	[3] AAIJ	14BI	LHCB	$pp \to \gamma\mu^+\mu^- X$
	10530 ± 5 ± 9		[4] AAD	12A	ATLS	$pp \to \gamma\mu^+\mu^- X$
	10551 ±14 ±17		[4] ABAZOV	12Q	D0	$p\overline{p} \to \gamma\mu^+\mu^- X$

NODE=M206M

OCCUR=2

[1] 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

[2] From $\chi_{b1}(3P) \to \Upsilon(1S, 2S)\gamma$ transitions assuming $m_{\chi_{b2}(3P)} - m_{\chi_{b1}(3P)} = 10.5 \pm 1.5$ MeV and allowing for ±30% variation in the $\chi_{b2}(3P)$ production rate relative to that of $\chi_{b1}(3P)$.

NODE=M206M;LINKAGE=A

YOUR NOTE

[3] From $\chi_{b1}(3P) \to \Upsilon(3S)\gamma$ transition assuming $m_{\chi_{b2}(3P)} - m_{\chi_{b1}(3P)} = 10.5 \pm 1.5$ MeV.

NODE=M206M;LINKAGE=C

[4] The mass barycenter of the merged lineshapes from the $J = 1$ and 2 states.

NODE=M206M;LINKAGE=AA

$\chi_{b1}(3P)$ BRANCHING RATIOS

NODE=M206225

$\Gamma(\Upsilon(3S)\gamma)/\Gamma_{total}$ — **Γ_3/Γ**

NODE=M206R03

	VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
YOUR DATA	**seen**	182	AAIJ	14BI	LHCB	$pp \to \gamma\mu^+\mu^- X$

NODE=M206R03

$\chi_{b1}(3P)$ REFERENCES

NODE=M206

	AAIJ	14BG JHEP 1410 088	R. Aaij *et al.*	(LHCb Collab.)	REFID=56199
YOUR PAPER	AAIJ	14BI EPJ C74 3092	R. Aaij *et al.*	(LHCb Collab.)	REFID=56235
	AAD	12A PRL 108 152001	G. Aad *et al.*	(ATLAS Collab.)	REFID=54037
	ABAZOV	12Q PR D86 031103	V.M. Abazov *et al.*	(D0 Collab.)	REFID=54264