

Wei-Ming Yao (LBNL)

- **Introduction**
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 - **Creating new decay and Branching ratio**
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Contact: send email to pdg-feedback-workspace@pdg.lbl.gov

- Starting point for PDG collaborators, login in <https://pdgprod.lbl.gov/PdgWorkspace> and encoding instructions at pdgprod.lbl.gov/twiki/bin/view/Pdg/PdgEncodingInstructions
- Each person requires a login via their email address used by PDG
- **Encoding procedures:**(Recap for new users)
 - Go to pdg.lbl.gov, Click “About PDG” and “Encode Tools” or go direct to <http://pdg.lbl.gov/rpp/encoders/contents.html>
 - Click “Particle Listings under Revision” to find list of particles
 - For example, click “Bottom Mesons” to find list of B mesons
 - Click B⁺ S041.pdf and on right side of pages: **listed node names and DESIG**
 - Each decay has DESIG=xx number to be ordered in list
 - Each node has unique name on right side: S041S95
 - See next page for examples.
 - Useful to identify the node name and desig code before encoding .

• Decay Modes are located via DESIG and each branching ratio has Node name
\Gamm is dynamic generated not useful

Mode	Fraction (Γ_i/Γ)	Scale factor/ Confidence level
Semileptonic and leptonic modes		
Γ_1 $\ell^+ \nu_\ell$ anything	[a] (10.99 \pm 0.28) %	NODE=S041;CLUMP=A
Γ_2 $e^+ \nu_e X_c$	(10.8 \pm 0.4) %	DESIG=220
Γ_3 $D \ell^+ \nu_\ell$ anything	(9.8 \pm 0.7) %	DESIG=473
Γ_4 $\overline{D}^0 \ell^+ \nu_\ell$	[a] (2.27 \pm 0.11) %	DESIG=485
Γ_5 $\overline{D}^0 \tau^+ \nu_\tau$	(7.7 \pm 2.5) $\times 10^{-3}$	DESIG=145
Γ_6 $\overline{D}^*(2007)^0 \ell^+ \nu_\ell$	[a] (5.69 \pm 0.19) %	DESIG=498
Γ_7 $\overline{D}^*(2007)^0 \tau^+ \nu_\tau$	(1.88 \pm 0.20) %	DESIG=146
Γ_8 $D^- \pi^+ \ell^+ \nu_\ell$	(4.2 \pm 0.5) $\times 10^{-3}$	DESIG=499
		DESIG=418

Indent means sub-decay channel

$\Gamma(\overline{D}^0 \tau^+ \nu_\tau)/\Gamma_{\text{total}}$	DOCUMENT ID	TECN	COMMENT	Γ_5/Γ	
VALUE (units 10^{-2})					
0.77 \pm 0.22 \pm 0.12	¹ BOZEK	10	BELL $e^+ e^- \rightarrow \Upsilon(4S)$		NODE=S041C01
• • • We do not use the following data for averages, fits, limits, etc. • • •					NODE=S041C01
0.67 \pm 0.37 \pm 0.13	² AUBERT	08N	BABR Repl. by AUBERT 09s		
¹ Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.					NODE=S041C01;LINKAGE=EP
² Uses a fully reconstructed B meson as a tag on the recoil side.					NODE=S041C01;LINKAGE=AU
$\Gamma(\overline{D}^0 \tau^+ \nu_\tau)/\Gamma(\overline{D}^0 \ell^+ \nu_\ell)$				Γ_5/Γ_4	
VALUE	DOCUMENT ID	TECN	COMMENT		
0.429 \pm 0.082 \pm 0.052	^{1,2} LEES	12D	BABR $e^+ e^- \rightarrow \Upsilon(4S)$		NODE=S041C52
• • • We do not use the following data for averages, fits, limits, etc. • • •					NODE=S041C52
0.314 \pm 0.170 \pm 0.049	¹ AUBERT	09s	BABR Repl. by LEES 12D		
¹ Uses a fully reconstructed B meson as a tag on the recoil side.					NODE=S041C52;LINKAGE=AU
² Uses $\tau^+ \rightarrow e^+ \nu_e \overline{\nu}_\tau$ and $\tau^+ \rightarrow \mu^+ \nu_\mu \overline{\nu}_\tau$ and e^+ or μ^+ as ℓ^+ .					NODE=S041C52;LINKAGE=LE

•Each person requires login to PdgWorkspace

- click “All tasks” to see list of assigned papers.
- If there are unsigned papers, click “edit encoder/overseer assignments” to claim your papers to be encoded.
- To encode AAIJ 2014AA for example

PDGworkspace Encoding System | Review App | Wei-Ming Yao | change your password | log out | [reset to defaults](#)

Task Filters: Show for user

Task List - 53 total
edit encoder/overseer assignment

Task	Paper	Particle	Status	Encoder	Overseer	Note
AAJ 2014AA	JHEP 1406 8	Q007	Released	Hagiwara	Yao	ATLAS
AAJ 2014AK	PR D90 052007	S086	Released	Eerola	Yao	ATLAS
AAJ 2014D	JHEP 1406 009	Q007	Released	Hagiwara	Yao	ATLAS
AAJ 2014I	JHEP 1402 107	Q007	Released	Hagiwara	Yao	four charge asym.
AAJ 2014U	PR D90 052007	S086	Released	Eerola	Yao	ATLAS
AAJ 2014AA	PRL 112 202001	S040	Released	Eerola	Yao	S041, LHCb
AAJ 2014AI	JHEP 1404 87	S040	Released	Eerola	Yao	LHCb
AAJ 2014AR	PRL 113 151601	S041	Released	Eerola	Yao	LHCb
AAJ 2014H	PR D89 032001	S061	Released	Eerola	Yao	LHCb
AAJ 2014L	JHEP 1407 140	S086	Released	Eerola	Yao	LHCb
AAJ 2014O	JHEP 1405 082	S041	Released	Eerola	Yao	LHCb
AAJ 2014R	PL B736 446	S086	Released	Eerola	Yao	LHCb
AAJ 2014S	PL B736 186	S086	Released	Eerola	Yao	LHCb
AAJ 2014V	PL B733 36	S041	Released	Eerola	Yao	LHCb
AAJ 2014	PR D89 092006	S086	Released	Eerola	Yao	LHCb
AALTONEN 2014A	PR D89 091101	Q007	Released	Hagiwara	Yao	CDF
AALTONEN 2014F	PRL 113 042001	Q007	Released	Hagiwara	Yao	CDF

- Click “Add reference”
- Filling first author name et al, Verifier, Collaboration, Note
- Click “assign another particle to the reference if there is more, then click task list to assign the extra assigned particles to the corresponding encoder/overseer.

PDG workspace Encoding System | [Review App](#) | [Wei-Ming Yao](#) | [change your password](#) | [cc.cu](#)

AAIJ 2014AA (PRL 112 2014 001)

[reference details](#) | [and measurements](#) | [toolbox](#) | [review & sign off](#) | [return to task list](#)

Author(s): ☒ et al

Verifier: [save details](#)

Collaboration(s):

Collaboration(s):

Collaboration(s):

Note:

Assigned Particles

Successfully assigned the particle to the reference.

Particle Code	Particle Name	Finder	
S040	$\lambda_{\{0\}^{\wedge}\{0\}}$	CW,SL	Mark as Empty
S041	$B^{\wedge}\{pm\}$	Yao	Mark as Empty
S042	$B^{\wedge}\{0\}$	Yao	Mark as Empty

[assign another particle to this reference](#)

- Click “Add measurement”: Node=S042S02 ($B^0 \rightarrow \Lambda_c^+ \Lambda_c^-$)
- Filling Node, Best Limit, Value, CL, TECH, Comments, footnote, then “save”
- If the measurement is the best limit, we have to edit existing one, set “not used”.

AAJ 2014AA [PRL 112 202001]

reference details add measurements toolbox review & sign off return to task list

Add New Measurement

* Node ID: S042S02

Document ID: AAJ 2014AA

* Used? [x] Value [1]: <1.6 E-5

EVTS [1]: CL% [1]: 95 TECN [1]: LHC3 Charge Comment [1]: #d [p p] at 7 TeV

Footnote [1]: Uses $\mathcal{B}(B^0 \rightarrow D^+ D_s^-) = 0.15\%$ and $\mathcal{B}(D^+ D_s^- \rightarrow \Lambda_c^+ \Lambda_c^-) = 0.3\%$.

save measurement

Data Block Browser

Datablock for Node S042S02

Value (10 ⁻⁵)	CL%	Document ID	TECN	Comment	occ	Actions
<6.2	OUR BEST LIMIT					
<1.6	95	AAJ 2014AA	LHC3	#p at 7 TeV	1	edit delete
*** We do not use the following data for averages, fits, limits, etc ***						
<6.2	90	UCI 012A ²	BEJL	$e^+e^- \rightarrow T(4S)$	1	edit delete

1 Uses $\mathcal{B}(B^0 \rightarrow D^+ D_s^-) = (7.2 \pm 0.8) \times 10^{-1}$.

2 Assumes equal production of D^+ and D^0 at the $T(4S)$.

• Look up the corresponding node from the full data listing (s041.pdf or s042.pdf), which is more efficient when there are couple hundred decays or Data Block Browsers below.

• Do encoding below and save. Using latex for footnote and comment is acceptable.

PDG workspace Encoding System | Review 6.00 | Wei-Ming Yao | [change your password](#) | [logout](#)

AAIJ 2014AA (PR 112 202001)

[reference details](#) [add measurements](#) [toolbox](#) [review & sign off](#) [return to task list](#)

The measurement has been deleted.

Add New Measurement

* Node (M)	Document ID	* Used? (Y)	Value (MeV)	EVTS (M)	TECN	Charge	Comment (M)
S040DM2	AAIJ 2014AA	used	339.724±0.244±0.18		LHCB		$\pi^0(\mu^+\mu^-)$ at 7 TeV
Footnote (M)							
Uses exclusively reconstructed final states $\Lambda^0 \rightarrow p \bar{K}^0$, $\Lambda^0 \rightarrow p \pi^-$, $\Lambda^0 \rightarrow n \pi^0$ and $\Lambda^0 \rightarrow n \pi^-$ decays.							
save measurement							

Data Block Browser

5040 - Lambda(b)0

- 5040M m_{Λ^0} MASS
- 5040M $m_{\Lambda^0} - m_{\pi^0}$
- 5040M2 $m_{\Lambda^0} - m_{\pi^+}$
- 5040T Λ^0 MEAN LIFE
- 5040T $\tau_{\Lambda^0}/\tau_{\pi^0}$
- 5040T $\tau_{\Lambda^0}/\tau_{K^0}$ MEAN LIFE RATIO
- 5040TR $\tau_{\Lambda^0}/\tau_{K^0}$ (direct measurements)
- 5040B BRANCHING RATIOS
- 5040B1 $\Gamma(\Lambda^0 \rightarrow J/\psi(\gamma S)A \times B(\bar{K}^0 \rightarrow A_1^0 \pi^0))/\Gamma_{\text{total}}$
- 5040B1 $\Gamma(\Lambda^0 \rightarrow p \bar{D}^0 \pi^-)/\Gamma_{\text{total}}$
- 5040B2 $\Gamma(\Lambda^0 \rightarrow p \bar{D}^0 K^-)/\Gamma(\Lambda^0 \rightarrow p \bar{D}^0 \pi^-)$
- 5040B3 $\Gamma(\Lambda^0 \rightarrow A_1^0 \pi^-)/\Gamma_{\text{total}}$
- 5040B4 $\Gamma(\Lambda^0 \rightarrow n \bar{K}^0 \pi^-)/\Gamma(\Lambda^0 \rightarrow A^0 \pi^-)$

Dateblock for Node [S040DM2](#)

Value (MeV)	Document ID	TECN	Comment	acc	Actions
339.71 ± 0.71 ± 0.09	AAIJ ¹ 2012E	LHCB	at 7 TeV	1	edit delete

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

¹ Uses exclusively reconstructed final states containing $J/\psi \rightarrow \mu^+ \mu^-$ decays

• Some case, a ratio of branching ratio is measured, for example,
 $B(B_s \rightarrow D + D_s^-) / B(B^0 \rightarrow D + D_s^-) = 0.038 \pm 0.004 \pm 0.003$.

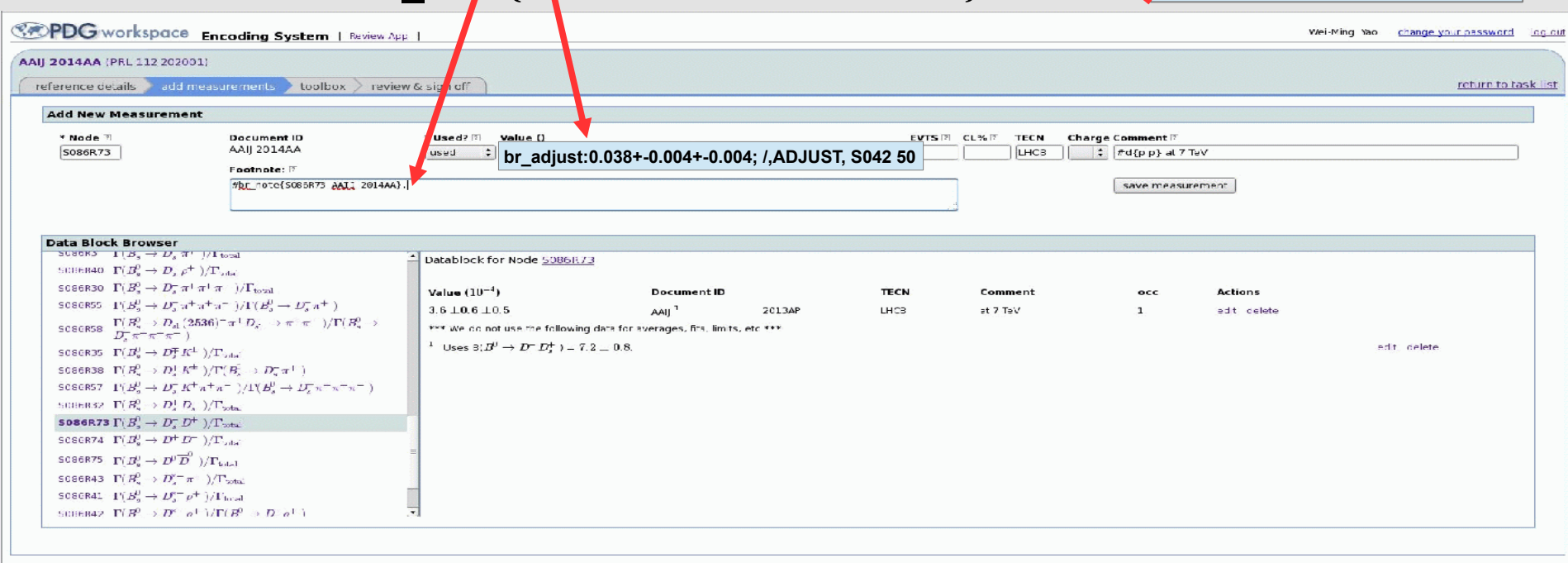
• PDG uses br_adjust to rescale $B(B_s \rightarrow D + D_s^-)$ properly when the value of $B(B^0 \rightarrow D + D_s^-)$ could change in future. The syntax are below:

DESIG for $B^0 \rightarrow D + D_s^-$

– Measurement: br_adjust:0.038+-0.004+-0.003; /, ADJUST, S042 50

– Footnote: #br_note{S086R73 AAIJ 2014AA}

/ for ratio; * for product



The screenshot shows the PDG workspace interface. At the top, there's a navigation bar with 'reference details', 'add measurements', 'toolbox', and 'review & sign off'. Below this is the 'Add New Measurement' form. The 'Document ID' field is set to 'AAIJ 2014AA'. The 'Value ()' field contains 'br_adjust:0.038+-0.004+-0.004; /,ADJUST, S042 50'. The 'Footnote: {}' field contains '#br_note{S086R73 AAIJ 2014AA}'. The 'Data Block Browser' on the left lists various data blocks, with 'S086R73' highlighted. The 'Datablock for Node S086R73' on the right shows the value '3.6 ± 0.6 ± 0.5' and the document ID 'AAIJ 1 2013AP'.

- Creating new decay is not recommended for B+, and B0 (ask overseer and Piotr for it).
 - Select particle, browser list decays locating where to put new decay.
 - Drag particles on the right box to form the decay chain and save it
- Creating Branch ratios:
 - Browser Branching ratios node to locate where to put and decide ratio or BR

PDGworkspace

Encoding System |
[Review API |](#)

[Help](#)

AAJ 2034AA (PRL 112 20201)

reference details
add measurements
toolbox
review & sign off

decay mode
branching ratio

Particle Selector:

branching ratios for S086

$\Gamma(B_s^0 \rightarrow K^0 K^+ K^-) / \Gamma_{\text{total}}$

68: $\Gamma(B_s^0 \rightarrow K^0 K^+ K^-) / \Gamma_{\text{total}}$

69: $\Gamma(B_s^0 \rightarrow \bar{K}^0 (892)^0 \phi) / \Gamma_{\text{total}}$

70: $\Gamma(B_s^0 \rightarrow \bar{K}^0 (892)^0 K^+ (892)^0) / \Gamma_{\text{total}}$

71: $\Gamma(B_s^0 \rightarrow \phi K^+ (892)^0) / \Gamma_{\text{total}}$

72: $\Gamma(B_s^0 \rightarrow \bar{p} \bar{p}) / \Gamma_{\text{total}}$

73: $\Gamma(B_s^0 \rightarrow A_c^- A_c^+) / \Gamma_{\text{total}}$

74: $\Gamma(B(s)^0 \rightarrow A_c^- A_c^+) / \Gamma_{\text{total}}$

75: $\Gamma(B_s^0 \rightarrow \gamma \gamma) / \Gamma_{\text{total}}$

76: $\Gamma(B_s^0 \rightarrow \phi \gamma) / \Gamma_{\text{total}}$

77: $\Gamma(B_s^0 \rightarrow \mu^+ \mu^-) / \Gamma_{\text{total}}$

78: $\Gamma(B_s^0 \rightarrow e^+ e^-) / \Gamma_{\text{total}}$

79: $\Gamma(B_s^0 \rightarrow e^+ \mu^- \tau^-) / \Gamma_{\text{total}}$

Add New Branching Ratio for B(s)(J)0 (S086)

You have successfully created the branching ratio.

Specify where to insert the new branching ratio by clicking on the desired location on the left

Finished and go back to add measurement !

Finished and go back to add measurement !

- Click “Review to sign off” will show you all the encoding for the paper so far
- Click “review RPP” shows pdf file and edit to correcting any mistakes
- Be careful: measurement used or not, add comments “Repl. By ...”. final sign off

PDG workspace Encoding System | Review 600 | Wei-Ming Yao | change your password | log out

AAJ 2014AA (PRL 112 202001)

reference details | add measurements | toolbox | **review & sign off** | return to task list

Sign off Encodings

Reference Details

Reference	Authors	Collaboration
AAJ 2014AA (PRL 112 202001)	et al, R. Aaij	LHCb

New Measurements for S040

Node	Document ID	Used?	Value	EVTS	CL%	TECN	Comment	
1) S040R25	AAJ 2014AA	used	$0.042 \pm 0.003 \pm 0.003$			LHCb	#d(p p) at 7 TeV	edit view rpp for S040R25
2) S040R24	AAJ 2014AA ¹	used	$1.1 \pm 0.1 \text{ E-2}$			LHCb	#d(p p) at 7 TeV	edit view rpp for S040R24
1: Uses $B(\bar{B}^0 \rightarrow D^+ D_s^-) = (7.2 \pm 0.8) \times 10^{-3}$ and their measured $B(\Lambda_b^0 \rightarrow \Lambda_c^+ \pi^-) / B(\bar{B}^0 \rightarrow D^+ \pi^-)$ values.								
								edit footnote
3) S040DM2	AAJ 2014AA ¹	used	$339.72 \pm 0.24 \pm 0.18 \text{ MeV}$			LHCb	#d(p p) at 7 TeV	edit view rpp for S040DM2
1: Uses exclusively reconstructed final states $\Lambda_b^0 \rightarrow \Lambda_c^+ D_s^-$, $\Lambda_c^+ D^-$ and $\bar{B}^0 \rightarrow D^+ D_s^-$ decays.								
								edit footnote
4) S040M	AAJ 2014AA ¹	used	$5619.30 \pm 0.34 \text{ MeV}$			LHCb	#d(p p) at 7 TeV	edit view rpp for S040M
1: Uses exclusively reconstructed final states $\Lambda_b^0 \rightarrow \Lambda_c^+ D_s^-$, $\Lambda_c^+ D^-$ and $\bar{B}^0 \rightarrow D^+ D_s^-$ decays. The uncertainty includes both statistical and systematic contributions.								
								edit footnote

Other Measurements From This Paper

Node	Document ID	Used?	Value	EVTS	CL%	TECN	Comment
S042	AAJ 2014AA	not used					

- **Some parts of encoding are still not working friendly**
- **About half of encoders and overseers have used the new system for RPP2014**
- **We encourage every encoder to try out the new system early, do not wait for the last minutes.**
- **It will take you some time in the beginning, but let us know if you have any problems.**
- **Once familiar with the system, the encoding efficiency will improve.**