Encoding Interface

Wei-Ming Yao (LBNL)

- Introduction
- Reference
- Add measurements
  - Best limit or not
  - Add new measurement
  - Add measurement with br_adjust rescaling
- Toolbox
  - Creating new decay and Branching ratio
- Sign-off

Contact: send email to pdg-feedback-workspace@pdg.lbl.gov

Introduction

- **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 .**

Data Listing

- **Decay Modes are ordered 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				NODE=S041;CLUMP=A
Γ_1	$\ell^+ \nu_\ell$ anything	[a]	(10.99 ±0.28) %		DESIG=220
Γ_2	$e^+ \nu_e X_c$		(10.8 ±0.4) %		DESIG=473
Γ_3	$D \ell^+ \nu_\ell$ anything		(9.8 ±0.7) %		DESIG=435
Γ_4	$\overline{D}^0 \ell^+ \nu_\ell$	[a]	(2.27 ±0.11) %		DESIG=145
Γ_5	$\overline{D}^0 \tau^+ \nu_\tau$		(7.7 ±2.5)	$\times 10^{-3}$	DESIG=498
Γ_6	$\overline{D}^*(2007)^0 \ell^+ \nu_\ell$	[a]	(5.69 ±0.19) %		DESIG=146
Γ_7	$\overline{D}^*(2007)^0 \tau^+ \nu_\tau$		(1.88 ±0.20) %		DESIG=499
Γ_8	$D^- \pi^+ \ell^+ \nu_\ell$		(4.2 ±0.5)	$\times 10^{-3}$	DESIG=418

Indent means sub-decay channel

$\Gamma(\overline{D}^0 \tau^+ \nu_\tau)/\Gamma_{total}$ **Γ_5/Γ**

NODE=S041C01
NODE=S041C01

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
0.77±0.22±0.12	[1] BOZEK	10	BELL	$e^+e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.67±0.37±0.13	[2] AUBERT	08N	BABR	Repl. by AUBERT 09S

[1] Assumes equal production of B^+ and B^0 at the $\Upsilon(4S)$.
[2] Uses a fully reconstructed B meson as a tag on the recoil side.

NODE=S041C01;LINKAGE=EP
NODE=S041C01;LINKAGE=AU

$\Gamma(\overline{D}^0 \tau^+ \nu_\tau)/\Gamma(\overline{D}^0 \ell^+ \nu_\ell)$ **Γ_5/Γ_4**

NODE=S041C52
NODE=S041C52

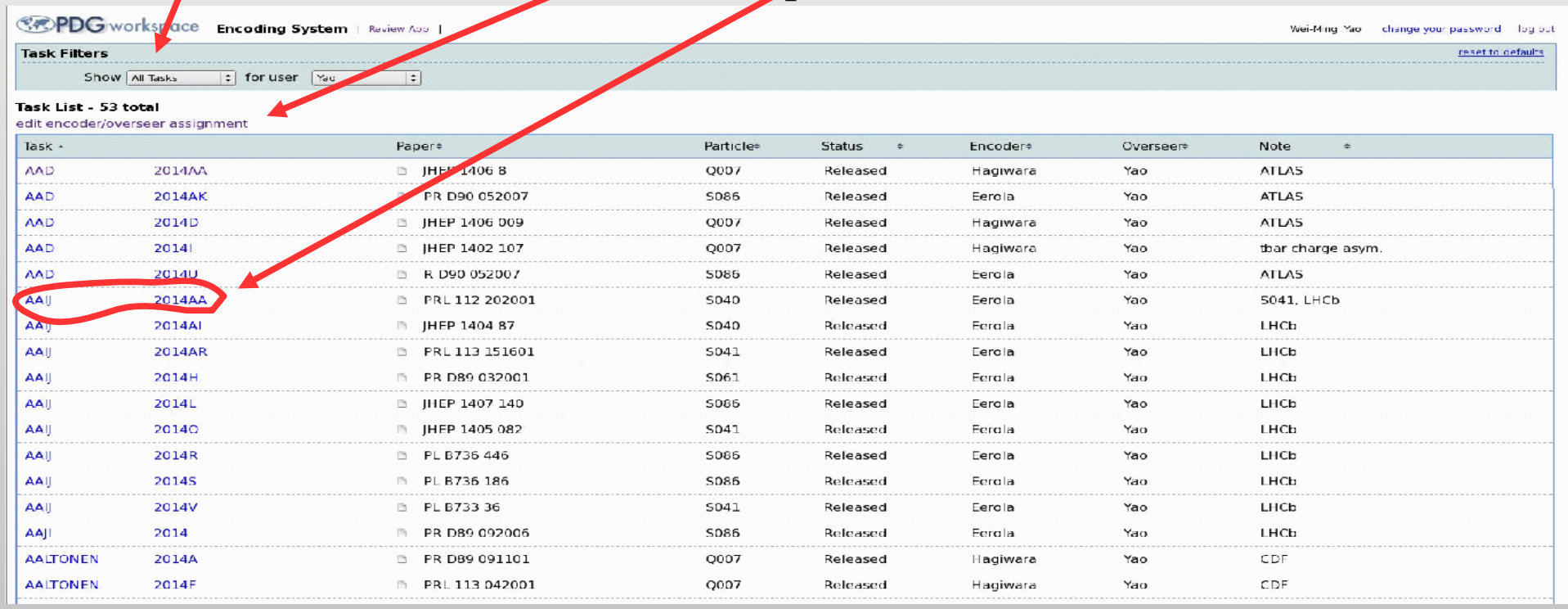
VALUE	DOCUMENT ID		TECN	COMMENT
0.429±0.082±0.052	[1,2] LEES	12D	BABR	$e^+e^- \to \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.314±0.170±0.049	[1] AUBERT	09S	BABR	Repl. by LEES 12D

[1] Uses a fully reconstructed B meson as a tag on the recoil side.
[2] Uses $\tau^+ \to e^+ \nu_e \overline{\nu}_\tau$ and $\tau^+ \to \mu^+ \nu_\mu \overline{\nu}_\tau$ and e^+ or μ^+ as ℓ^+.

NODE=S041C52;LINKAGE=AU
NODE=S041C52;LINKAGE=LE

Encoding

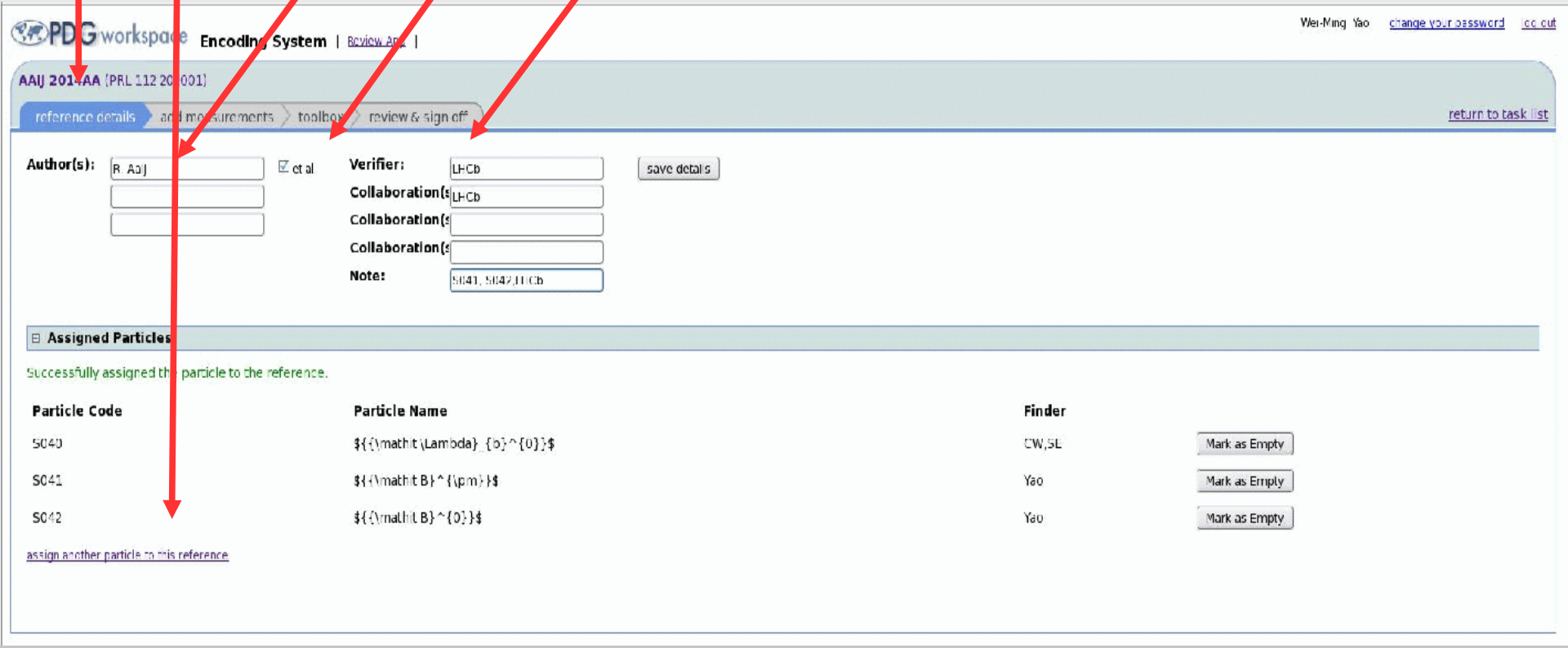
- **Each person requires login to PdgWorkspace**
  - **click "All tasks" to see list of assigned papers.**
  - **If there are unsigned papers, click "edit encoder/overseer assignments" to claim your papers to be encoded**
  - **To encode AAIJ 2014AA for example**



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

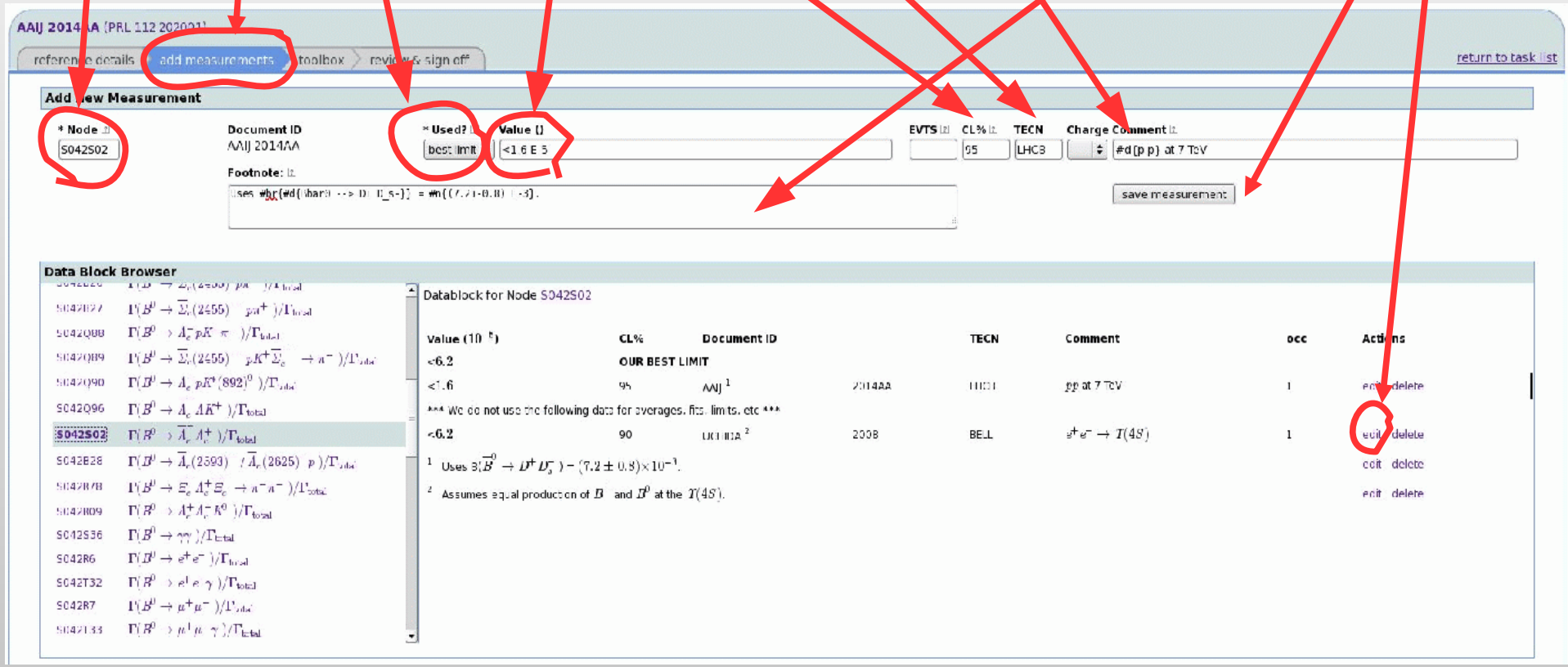
Add Reference

- 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.



Add Best Limit

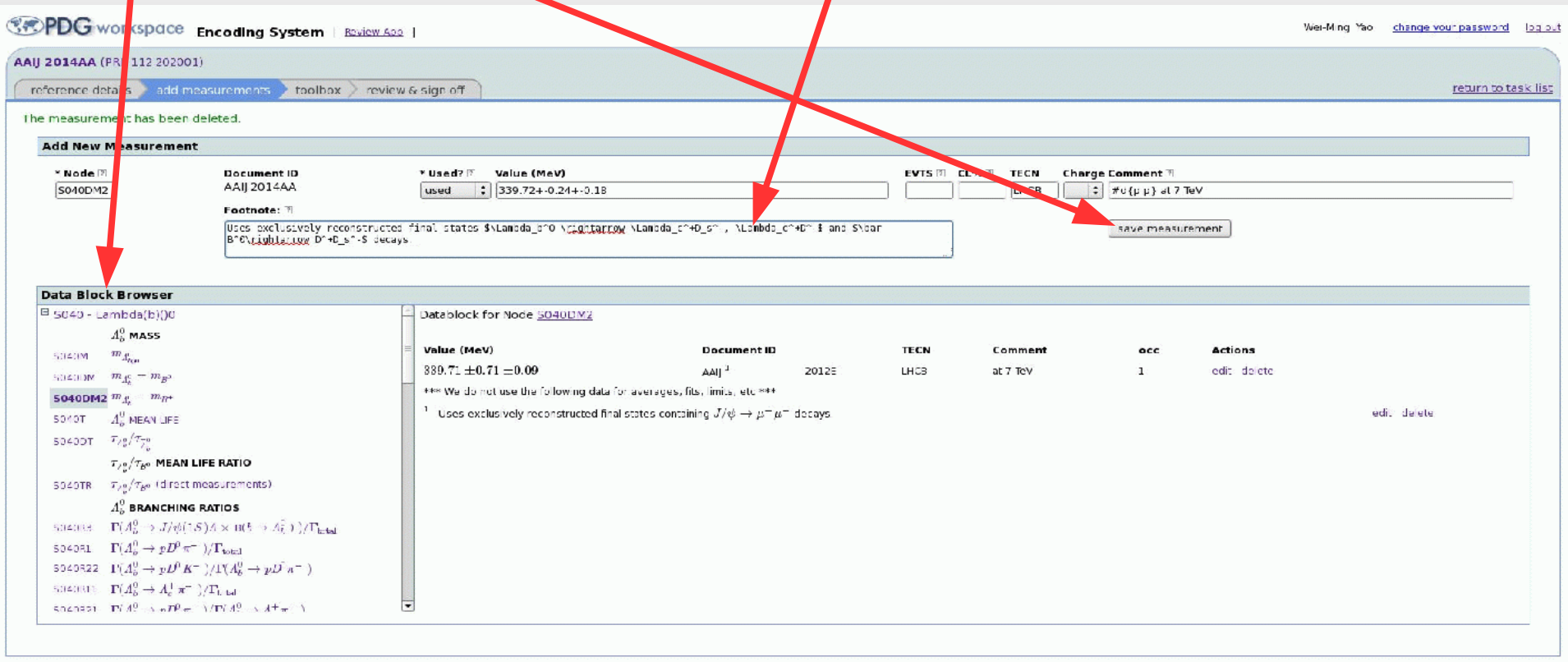
- Click "Add measurement": Node=S042S02 (B0->\Lambda_c^+\Lambda_c^-)
- Filling Node, Best Limit, Value, CL, TECH, Comments, footnote, then "save"
- If the measurement is the best limit, we have to edit existing one, set "not used".



Add Measurment

- **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.**

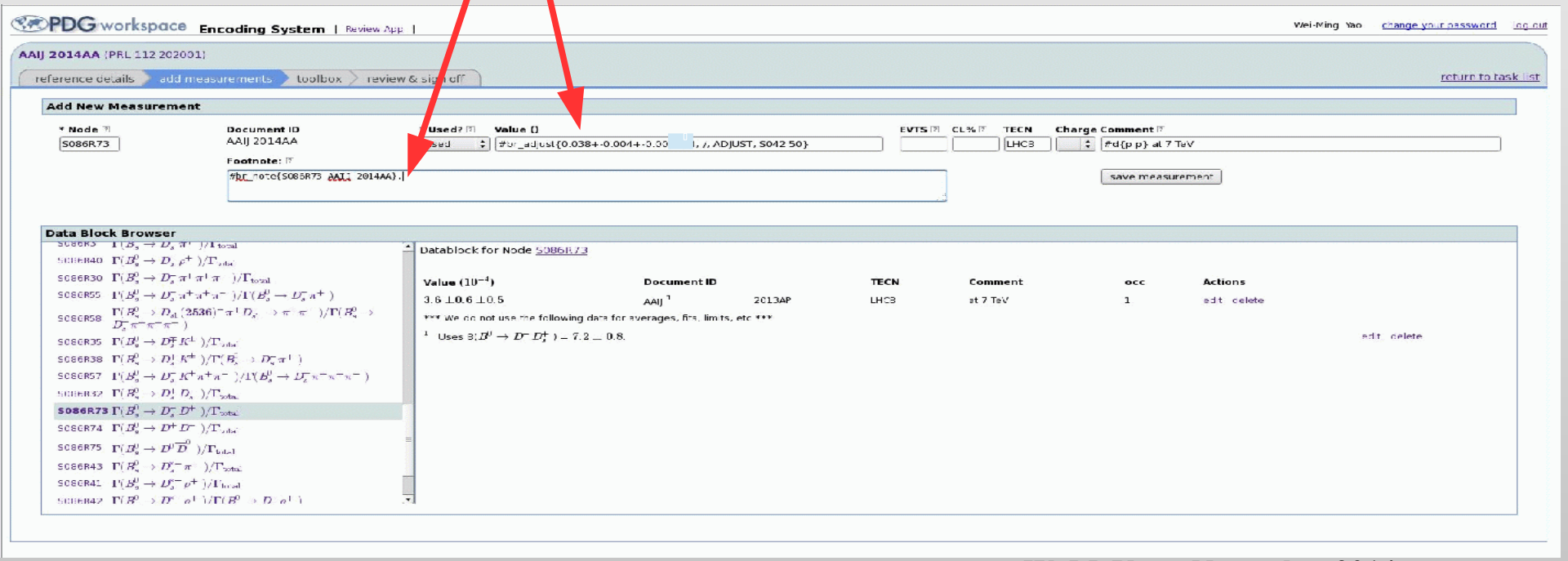


Add Measurement with br_adjust

- Some case, a ratio of branching ratio is measured, for example, B(Bs→D+Ds-)/B(B0→D+Ds-)=0.038+-0.004+-0.003.
- PDG uses br_adjust to rescale B(Bs→D+Ds-) properly when the value of B(B0→D+Ds-) could change in future. The syntax are below:
  - Measurement: #br_adjust{0.038+-0.004+-0.003; /, ADJUST, S042 50}
  - Footnote: #br_note{S086R73 AAIJ 2014AA}

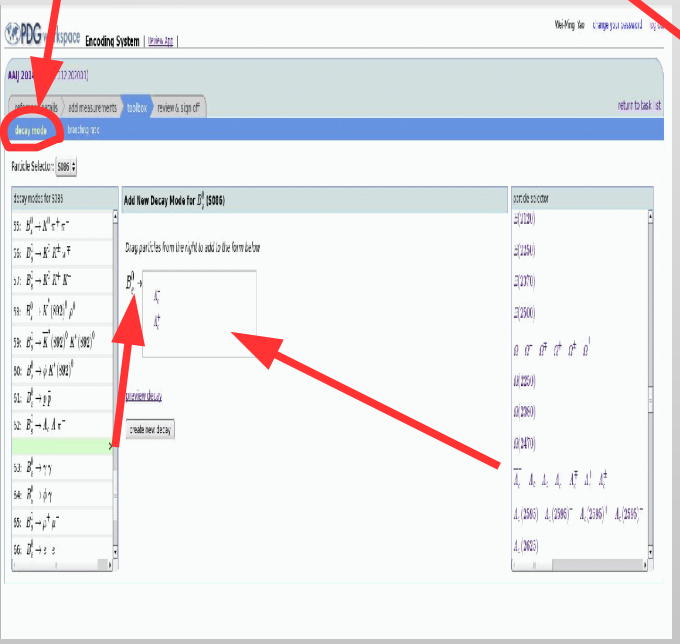
DESIG for B0→D+Ds-

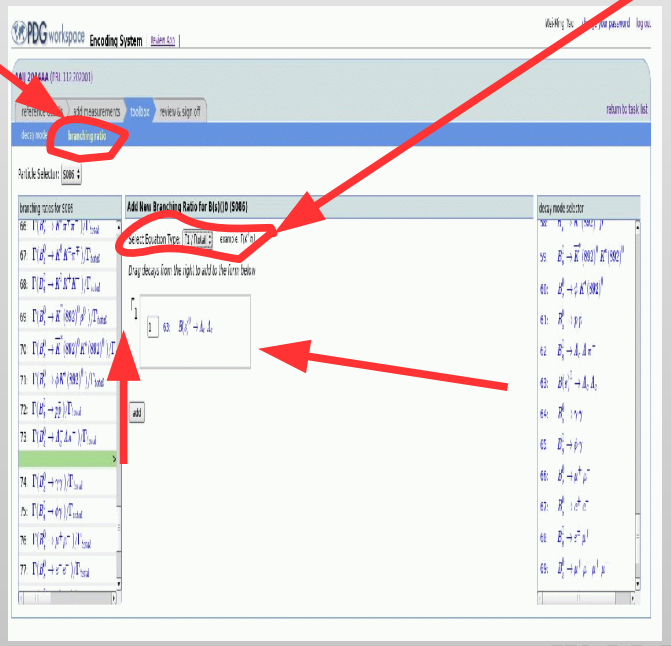
/ for ratio; * for product

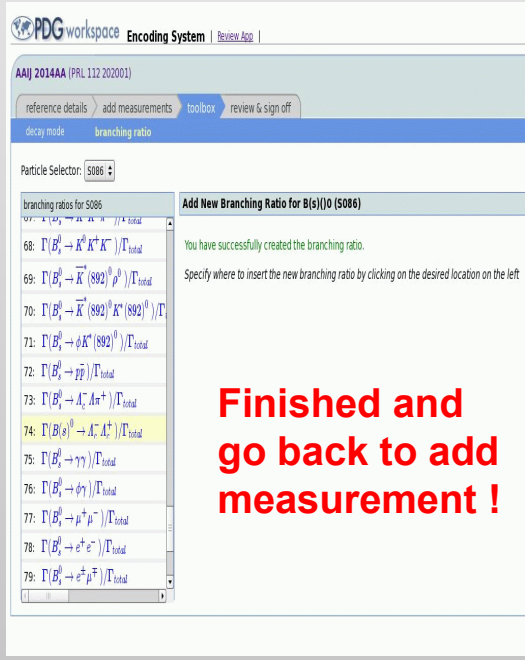


Create new Decay and Branching Ratios

- 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 rations:
  - Browser Branching ratios node to locate where to put and decide ratio or BR
  - Drag decays on the right side into the box and save it.

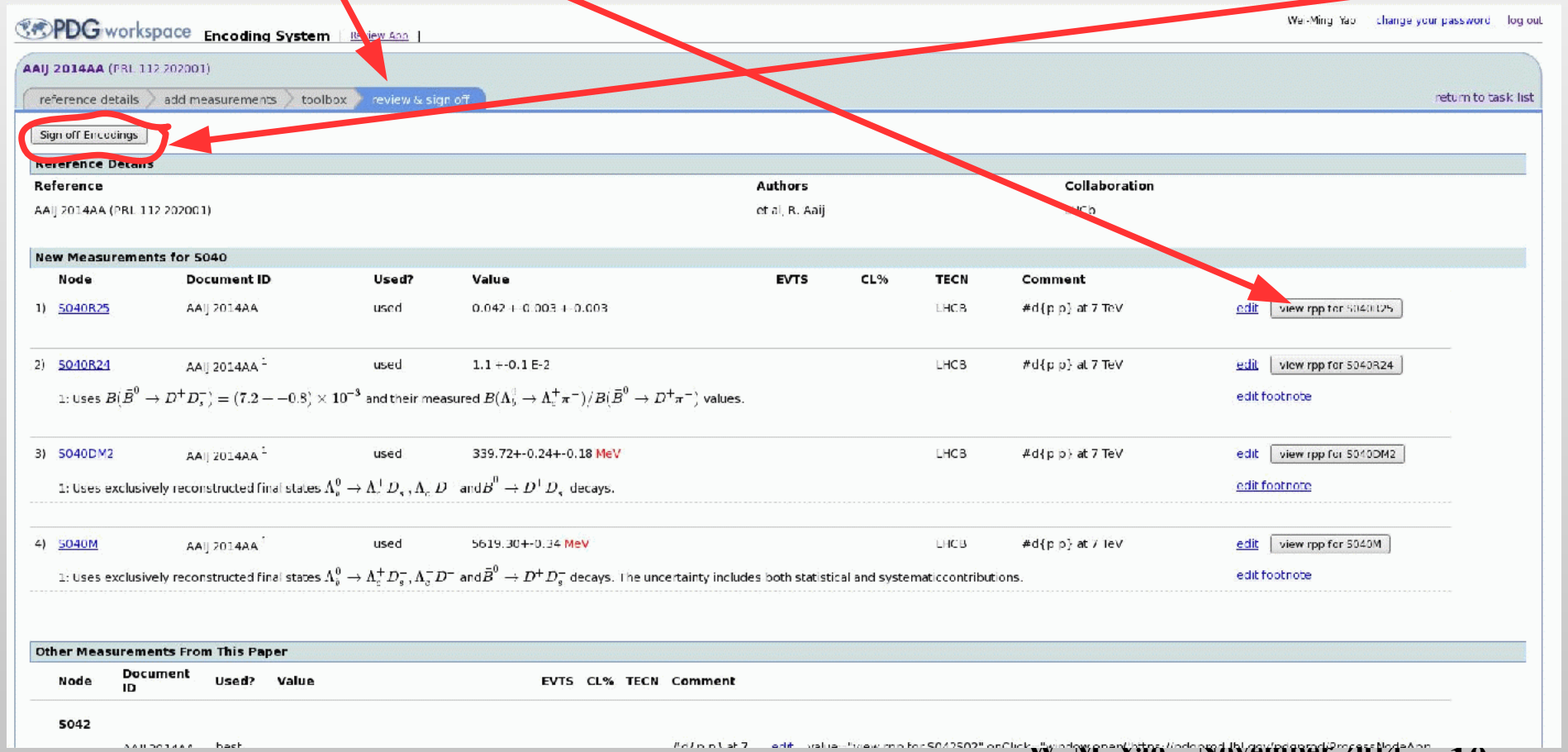






Review to Sign off

- 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



Word of Caution

- 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 mintues.
- 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.