Ryan Mitchell (Indiana University) HADRON 2023, Genoa, Italy, June 7, 2023

<u>BEPCII: Beijing Electron Positron Collider</u> symmetric  $e^+e^-$  collisions at E<sub>CM</sub> between 2.0 and 5.0 GeV





running since 2009 at the Institute of High Energy Physics in Beijing, China

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# BESIII publications (May 9, 2023)



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<b>Y Physics</b> = unexpected feat	$X(3872) \rightarrow \gamma J/\psi \text{ and } \gamma \psi(2S)$ PRL 124, 242001 (2020)		
New Results ( $\geq$ 2022):			
$\pi^+\pi^- J/\psi_{PRD 106,0}$			
$D^* D^* and D^*$			
$D_s D_s$ [arxiv:2305.]	TABLE L Relativ	ve branching ratios and UL on bra	nching ratios
How many and w	compared with $X($	$(3872) \rightarrow \pi^+ \pi^- J/\psi$ [18.27], when	re systematic
Future/Ongoing Wor	uncertainties have	been taken into account.	
Perform a global			
i ononn a Stobar	Mode	Ratio	UL
(3872) Physics = well-kn	$\gamma J/\psi$	$0.79 \pm 0.28$	
New Results ( $\geq$ 2022):	$\gamma \psi'$	$-0.03 \pm 0.22$	< 0.42
$e^+e^- \rightarrow \omega X(387)$	$\gamma D^0 \overline{D^0}$	$0.54\pm0.48$	< 1.58
Questions:	$\pi^0 D^0 \bar{D^0}$	$-0.13 \pm 0.47$	< 1.16
What is the $X(38')$	$D^{*0}\overline{D^0} +  ext{c.c.}$	$11.77 \pm 3.09$	•••
<b>Future/Ongoing Wor</b>	$\gamma D^+ D^-$	$0.00^{+0.48}_{-0.00}$	< 0.99
Study the line sha	$\omega J/\psi$	$1.6^{+0.4}_{-0.3} \pm 0.2$ [18]	
	$\pi^0 \chi_{c1}$	$0.88^{+0.33}_{-0.27} \pm 0.10$ [27]	
$Z_c$ Physics and $Z_{cs}$ Physics		0.27	
New Results ( $\geq$ 2022):			
$e^+e^- \rightarrow K_{\rm S} Z_{\rm cs}^0 \rightarrow$			
Questions:	$\implies$ BESIII can probe now	vel decay modes of the $X(3872)$ , include	ding radiative de
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Ryan Mitchell (Indiana University) – Overview of XYZ Physics at the BESIII Experiment

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Search for  $X(3872) \rightarrow \pi^0 \chi_{c0}, \pi^+ \pi^- \chi_{c0}, \pi^0 \pi^0 \chi_{c0}$ 

PRD 105, 072009 (2022)



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PRL 129, 112003 (2022)



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![](_page_34_Figure_2.jpeg)

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