

W/Z physics in CDR

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IHEP,CAS

News: CEPC Workshop



- CEPC workshop
 - 24-26 May 2018
 - *Università degli Studi Roma*
 - <https://agenda.infn.it/conferenceDisplay.py?confId=14816>

**Workshop on the Circular
Electron-Positron Collider**

EU Edition

Roma, May 24-26 2018
University of Roma Tre



<https://agenda.infn.it/conferenceDisplay.py?ovw=True&confId=14816>

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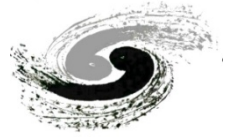
Related talks in CEPC workshop



Parallel 2		Physics	14:30	17:00	2:30	F. Piccinini, R. Manqi	
		Z pole+WW	14:30	15:15	0:45		P. Azzurri
		Z+Higgs	15:15	16:00	0:45		Yaquan Fang
		top	16:00	16:30	0:30		M. Vos
		BSM	16:30	17:00	0:30		B. Mele
Parallel 2c		Physics/Sim.	14:30	16:30	2:00	Patrizia Azzi, Yaquan Fang, Gang Li, Jenny List	
		H->invisible	14:30	15:00	0:30	Xin Shi	Confirmed
		Precision Higgs Combination	15:00	15:30	0:30	Kaili Zhang	Confirmed
		Machine learning for ee	15:30	16:00	0:30	Sofia Vallecorsa	Confirmed
		Physics at the Z pole	16:00	16:30	0:30	Zhijun Liang	Confirmed
Parallel 2d		Physics/Sim.	17:00	18:30	1:30	Patrizia Azzi, Yaquan Fang, Gang Li, Jenny List	
		ee->ZH ISR correction	17:00	17:30	0:30	Mario Greco	Confirmed
		W mass measurement	17:30	18:00	0:30	Hengne Li	Confirmed
		2HDM at ee	18:00	18:30	0:30	Bruce Mellado	Confirmed

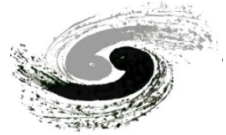
Welcome Dr. Hengne Li joining CEPC electroweak study

Reminder of CEPC W/Z runs



- **Some discussion about CEPC Z pole running .**
 - <http://indico.ihep.ac.cn/event/7709/>
 - E=240GeV, L=1.6 X 10³⁵ cm⁻²s⁻¹, solenoid field = 3T (new default)
 - Two year running proposed by accelerator team
- **WW threshold scan**
 - Proposal from accelerator team
 - One year running about 160GeV
 - Total luminosity 3.2 ab⁻¹

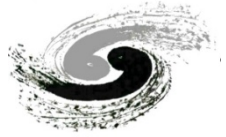
CEPC W/Z physics Plan for CDR



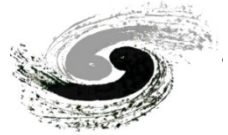
- Plan to cover the prospects of 6-7 key parameters.
- Plan to have First draft of CDR about W/Z physics ready by end of May.
 - <http://cepcgit.ihep.ac.cn/cepcdoc/CDR>

Observable	LEP precision	CEPC precision	CEPC runs	$\int \mathcal{L}$ needed in CEPC
m_Z	2 MeV	0.5 MeV	Z threshold scan runs	1ab^{-1}
m_W	33 MeV	2-3 MeV	WW threshold, ZH runs	5ab^{-1}
A_{FB}^b	1.7%	0.1%	Z threshold scan runs	1ab^{-1}
$\sin^2 \theta_W^{\text{eff}}$	0.07%	0.01%	Z threshold scan runs	1ab^{-1}
R_b	0.3%	0.05%	Z pole	1ab^{-1}
N_ν	1.7%	0.05%	ZH runs	5ab^{-1}
R_μ	0.2%	0.01%	Z pole	1fb^{-1}

Backup



Performance input



- Identify some performance input needed to support the W/Z physics prospect study
 - May need to repeat some study with 3T magnetic field and new detector geometry
- $A_{fb}(l)$: lepton angular resolution
- R_b : “B jet efficiency” vs “cjet/light rejection”
- W mass (direct approach) : jet energy resolution
- W mass (threshold scan): ?
- N_v : photon energy resolution

