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# Criteria for the sub-system option selection: a template (draft) for the calorimetry system

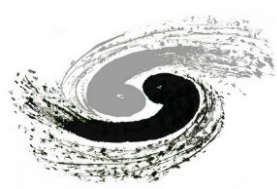
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CEPC TDRrd Meeting, Feb. 6, 2024

Materials based on the Meeting on Feb. 4, 2023: “Discussion on a template of criteria to down-select calorimeter options” (agenda at <https://indico.ihep.ac.cn/event/21571/> )

Participants (8): F. Guo (minutes), J. Liu (chair), Y. Liu, S. Qian, M. Ruan, S. Sun, H. Zhang, Y. Zhang

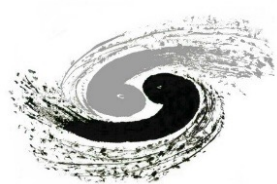
Talk updated after collective discussions; meeting [minutes](#)



# Down-select criteria: inputs and considerations

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- **Performance**: scientific driver
  - Boson Mass Resolution; detector-level performance
- **Cost**: boundary conditions
  - Estimates: total cost, key components
- **Technical** maturity
  - A key feature for Technical Design Report: distinguishable from Conceptual Design



# Down-select criteria: a first template

Category	Items		Priority	Remarks
Performance	Boson Mass Resolution (BMR) < 4%		A	H/Z/W/top full physics programs
	PID in jets: lepton ID and precision timing		A/B	Efficiency, purity
	EM energy resolution			
	$\pi^0$ reconstruction		B?	Efficiency, purity, mass resolution
	Pile-up at Z-pole			Occupancy, overlap, data stream, ...
Cost	Total Cost Estimates	Key components and crucial uncertainties	/	Availability, lead time and possible risks
Technical Readiness Level	Review of calorimetry technical options	Status (including full simulation, prototyping R&D, performance): to be summarized	/	Tasks allocated to each person according to technical options

- Priority for performance, detector requirements & specs: (A) must-have; (B) plus; (C) not essential
- Boundary conditions: longitudinal depth (ECAL=24 $X_0$ , HCAL=6 $\lambda_I$ ); detector geometry (constraints to be reviewed)