

Towards New Physics White Paper of CEPC

New Physics White Paper working group

报告人: Jia Liu (PKU)

CEPC 味物理-新物理和相关探测技术研讨会

复旦大学

2023-08-13

项目介绍

- 目标
 - 12月底，有NP白皮书初稿；2024年1-2月保交稿
- 工程实施步骤与时间表
 - (1) 9月完成素材收集：
 - 各个session convener请收集相关session的素材：
 - 写邮件请受邀相关文章作者就CEPC相关部分，
 - 写半页-1页的内容，内容格式 Abstract + Money Plot + Reference
 - 告知受邀作者，在放入白皮书的时候，内容可能会做适当修改；可能需要作者帮忙rescale 结果到CEPC
 - 建立一个共同列表：每个session convener给出自己已经邀请写作的文章作者。避免受邀请人重复写作。

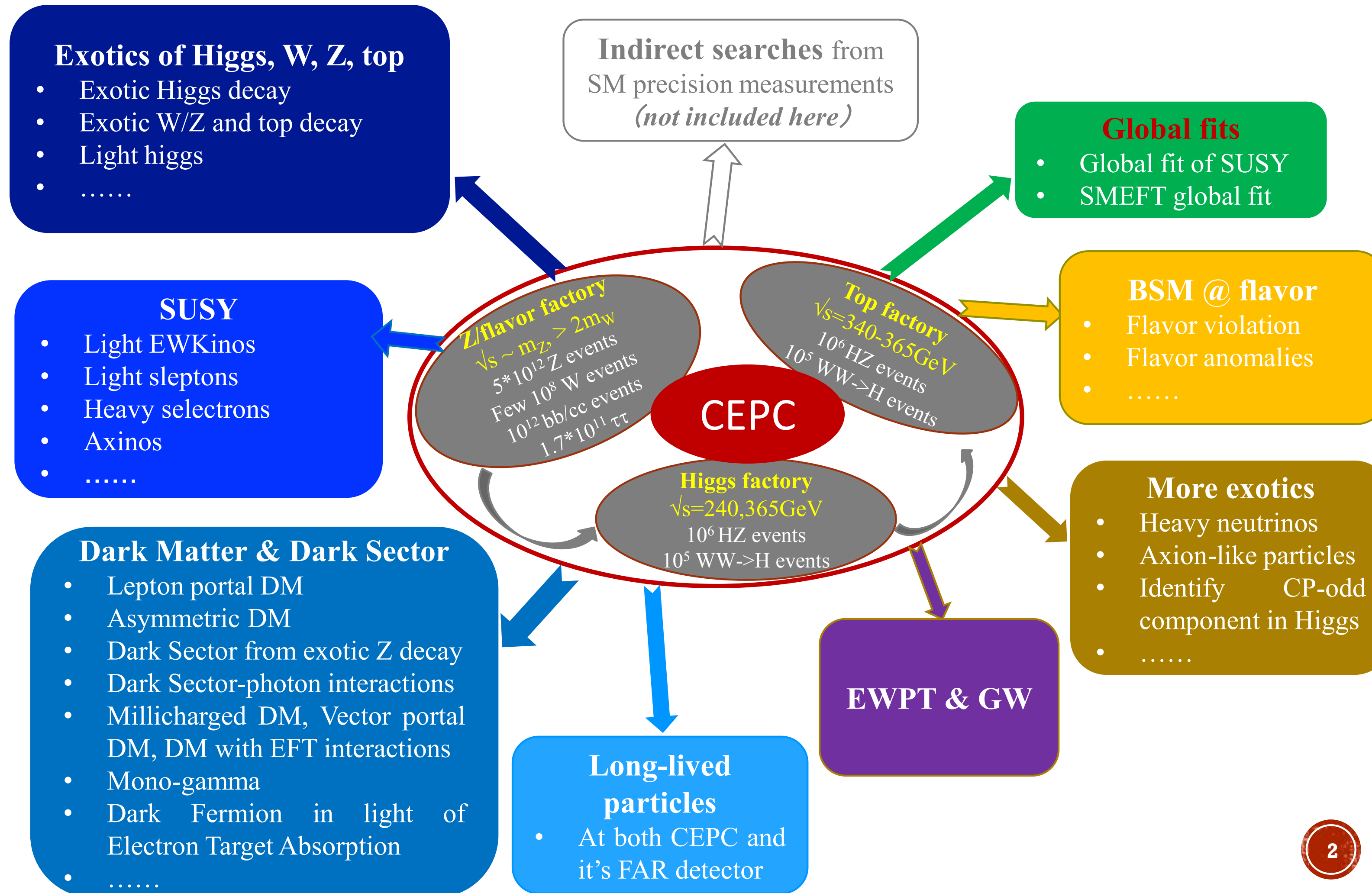
各session召集人名单

CEPC BSM White Paper (proposal)

- Session 1, Executive Summary (Liantao, Xuai, Manqi, Jia, Zhen)
- Session 2, Description of CEPC facility, nominal luminosity & Typical Detector Performance (Manqi)
- Session 3, Higgs portal & Exotic Higgs/Z/top decays (Yaquan, Zhao LI)
- Session 4, SUSY (Lei WU, Tianjun, Xuai)
- Session 5, Dark Matter and Dark Sector (Jia LIU, Xiaoping Wang, Yongchao Zhang)
- Session 6, Flavor Portal (Lingfeng, Xinqiang LI)
- Session 7, EWPT & GW (Kepan XIE, Sai WANG, Fapeng HUANG)
- Session 8, LLP (LiangLI, Kechen WANG)
- Session 9, More exotics (GaoYu, Zuowei LIU)
- Session 10, Global Fits (Jiayin GU, Yang ZHANG)
- Session 11, Conclusion (Liantao, Xuai, Manqi, Jia, Zhen)

相关session

CEPC BSM Physics Program



CEPC相关文章列表

- 如果有召集人认为合适的其它文章可以自行添加。
- 素材我们建立一个共享文件或者网页，把素材都整合到一起
- 辛苦EWPT&GW 和 BSM&Flavor的召集人加入相关文章

BSM Inputs & Status

- Exotic Decays
 - Higgs exotic decay (1709.06103; [1612.09284](#), 1808.02037; 1912.01431; 2008.05492 ; 2011.04540)
 - Z/W/Top exotic decay
 - Light higgs (Sven's [talk](#))
- SUSY Searches
 - Direct SUSY Searches (CPC46(2022)013106; 2101.12131; 2203.10580; 2202.11011, 2211.08132)
 - Indirect search of SUSY (2010.09782)
- Dark Matter and Dark Sector searches
 - Lepton portal DM (JHEP 06 (2021) 149)
 - Asymmetric DM (PRD 104(2021)055008)
 - Dark Sector from exotic Z decay (1712.07237), Dark Sector-photon interactions (2208.08142)
 - DM (Millicharged DM, Vector portal DM, DM with EFT interactions): 1903.1211
 - Mono-gamma (2205.05560),
 - Dark Fermion in light of Electron Target Absorption ([Kai Ma's talk](#))
- Long-lived particles (1904.10661, 1911.06576, 2201.08960, Yulei Zhang's [Talk](#), Wei Su's [Talk](#), Cen Mo's [Talk](#);))
- More exotics:
 - Heavy neutrinos (2102.12826, 2201.05831);
 - Axion-like particles (2103.05218, 2204.04702, 2210.09335, [J. Phys. G](#))
 - Electroweak phase transition (1911.10210, 1911.10206, 2011.04540, 2204.05085)
 - Identify CP-odd component in Higgs (Changlong Xu's [talk](#))
- Global fits:
 - Global fit of SUSY (2203.04828, 2203.07883)
 - SMEFT global fit (2206.08326)

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 - (2) 10月1日-11月30日 Session内容写作（耗时2个月）：
 - 由各Session召集人一起完成各章节内容整合，
 - 尽量对本章节有清晰主线，内容自洽：Visionary summary and benchmark introduction
 - 内容可以参考CEPC Physics Potential Snowmass Report [2205.08553](#)
 - 突出CEPC与其它实验的互补：CEPC discovery power & Comparative advantages + added value/interplay V.S. other observation window/facilities Luminosity & Detector requirements.
 - 素材可以多个session使用，各用各的，强调与本章主题关系，不怕重复。

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 - 负责人 Liantao, Xuai, Manqi, Jia etc... 整合后，形成初稿
 - (4) 2024-1月 初稿交给所有作者阅读和修改，月底发布ArXiv

项目实施总览表

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Project Schedule

- Objective
 - By the end of December, an initial draft of the NP white paper should be ready, followed by submission for review in January-February 2024.
- Engineering Implementation Steps and Timeline
 - (1) September 2023 - Material Collection:
 - Each session convener should gather relevant materials for their respective sessions:
 - Contact invited article authors for content related to CEPC.
 - Provide a concise half to one-page write-up, following the format: Abstract + Money Plot + Reference.
 - Authors should be informed that some modifications might be made when incorporating the content into the white paper. Their assistance might be required to adapt results for CEPC.
 - Maintain a shared list of invited authors to prevent duplication.
 - (2) October 1 - November 30 - Session Content Writing (2 months):
 - Session conveners collaborate to consolidate content for each chapter.
 - Strive for a clear and consistent narrative within each chapter, covering Visionary Summary and Benchmark Introduction.
 - Content can be referenced from the CEPC Physics Potential Snowmass Report 2205.08553.
 - Highlight the synergies between CEPC and other experiments: CEPC's discovery power, comparative advantages, and its value in relation to other observation windows and facilities, considering factors like luminosity and detector requirements.
 - Materials can be shared among sessions, each emphasizing its relevance to the chapter's theme without concern for repetition.
 - (3) December 1 - December 30 - Integration of Session Content (1 month):
 - Led by Liantao, Xuai, Manqi, Zhen, Jia, etc., the integrated content forms the initial draft.
 - (4) January 2024 - Authors review and revise the initial draft, with an ArXiv release by month-end.

其它事项

- New comer welcome
- Integration and collaboration/presentation to international conference
- Communications on the progress:
 - bi-weekly meeting?
 - WeChat real-time communication
- Any wishlist?