

卓越中心拔尖人才评审报告

陈新

清华大学物理系



2019年12月07日

中科院高能所

申请人简历

主要学术经历		
起止年月	单位	职务
2017/12-目前	清华大学	准聘副教授
2013/12-2017/12	清华大学	准聘助理教授
2009/02-2013/08	美国威斯康辛大学麦迪逊分校	博士后研究员
2001/09-2009/02	美国威斯康辛大学麦迪逊分校	博士

主要学术兼职		
起止年月	单位	职务
2016/03-2019/03	北京大学高能物理中心	李政道青年学者
2017/03-2019/03	ATLAS合作组SCAB委员会	委员

主要研究课题

- 参与了希格斯粒子与tau轻子耦合的发现之旅。这是世界首个被发现的希格斯粒子与费米子（物质组成粒子）的耦合
- 参与了希格斯粒子与顶夸克（两个最重的基本粒子）参与的味改变中性流（FCNC），以及具有轻子数破坏（LFV）的希格斯粒子衰变模式的寻找。这是没有新粒子发现的情况下，对希格斯新物理性质的探索
- 对希格斯粒子的CP性质、tau轻子的电偶极矩和反常磁矩进行了理论研究，新方法可指导当前和未来对撞机上的实验测量
- 参与了双喷注共振态的寻找，这种共振态可以是可见物质与暗物质间的媒介粒子，是对撞机上探索暗物质的重要方向
- 今年3月份带领清华团队加入到CERN的FASER合作组。FASER是靠近ATLAS的一个前向探测器，用来探测在ATLAS碰撞中产生的轴子、暗物质媒介子等长寿命粒子

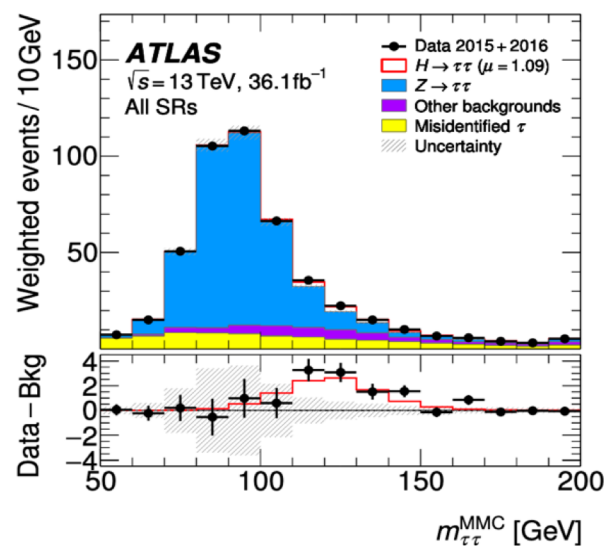
过去一年来发表的文章

类型	论文题目和刊物名称	作者列表	它引次数*	期刊影响因子
实验	“Cross-section measurements of the Higgs boson decaying to a pair of tau leptons in proton-proton collisions at $\sqrt{s}=13$ TeV with the ATLAS detector”, Phys. Rev. D 99 (2019) 072001	ATLAS Collaboration	31	4.394
	“Search for top quark decays $t \rightarrow Hq$ with 36 fb^{-1} of pp collision data at $\sqrt{s}=13$ TeV with the ATLAS detector”, JHEP 05 (2019) 123	ATLAS Collaboration	7	5.541
	“Searches for lepton-flavour-violating decays of the Higgs boson in $\sqrt{s}=13$ TeV pp collisions with the ATLAS detector”, Phys. Lett. B 800 (2020) 135069	ATLAS Collaboration	3	4.254
	“Search for low-mass resonances decaying into two jets and produced in association with a photon using pp collisions at $\sqrt{s}=13$ TeV with the ATLAS detector”, Phys. Lett. B 795 (2019) 56	ATLAS Collaboration	6	4.254
理论	“Probing the CP-Violation effects in the $h\tau\tau$ coupling at the LHC”, Phys. Lett. B 790 (2019) 332	Xin Chen, Yongcheng Wu	0	4.254
	“Search for the Electric Dipole Moment and anomalous magnetic moment of the tau lepton at tau factories”, JHEP 10 (2019) 089	Xin Chen, Yongcheng Wu	11	5.541
	“Precision Higgs Physics at CEPC”, Chin. Phys. C 43 (2019) 043002	F. An, Y. Bai, C. Chen, X. Chen, et al.	12	3.298

*它引数据来自inspire数据库

研究成果一

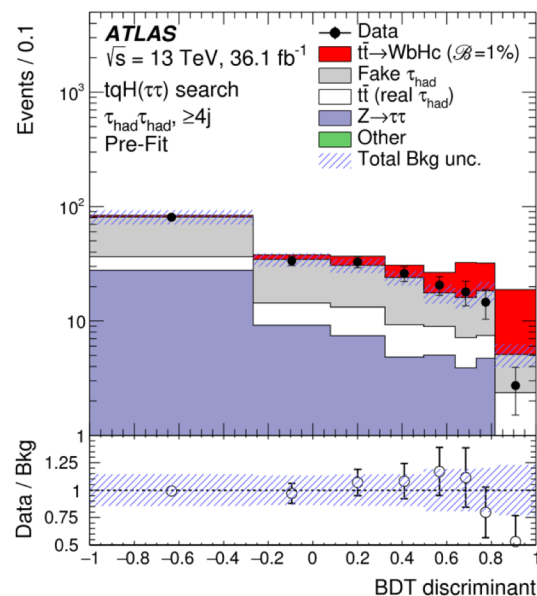
- 2016年，综合ATLAS和CMS Run-1数据的结果，这一衰变的显著效应达到了5倍标准偏差，**标志着Higgs和费米子的耦合方式被直接观测到**。2018年，ATLAS实验利用13 TeV 碰撞能量Run-2数据，实现了4.4倍标准偏差的观测结果。如果与Run-1的数据结合，显著效应进一步达到了6.4倍的标准偏差（信号强度 $1.09^{+0.18+0.26+0.16}_{-0.17-0.22-0.11}$ ），**从而实现了在单个LHC实验上对H $\rightarrow\tau\tau$ 衰变的发现**。
- 2018年底，ATLAS实验合作组发言人**Karl Jacobs**评价到：“... we may recall the memorable observation of Higgs boson couplings to fermions -to bottom and top quarks as well as to **tau leptons**-,...”。
- 本人长期在Higgs到轻子衰变分析组工作，**12-13, 15-18年担任双tau到双轻子末态方向的协调人（coordinator）**，并担任整个分析组的模拟数据联络人，代表分析组在合作组Higgs会议上做相关课题的**approval**报告。



加权重之后信号区双tau轻子不变质量分布。摘自 Phys. Rev. D99 (2019) 072001。

研究成果二

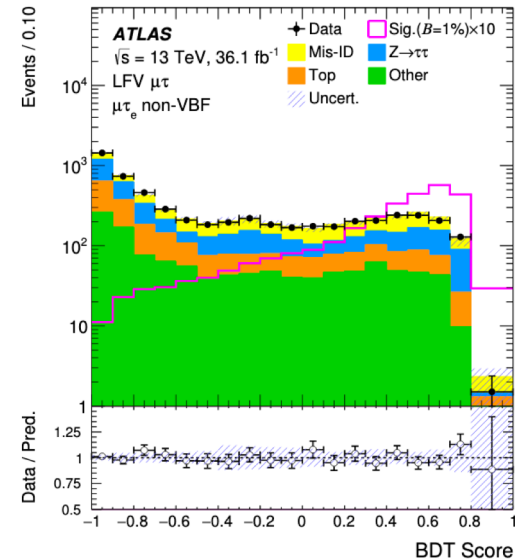
- 2016年，我和清华夏力钢博士首次中提出利用 $H \rightarrow \tau\tau$ 末态寻找 $t \rightarrow Hq$ 这种包含味改变中性流(FCNC)的新物理过程。与Higgs和top夸克相关的FCNC信号是理论和实验的热点之一，它结合了标准模型中两个最重的基本粒子，对新物理非常敏感。在过去两年多时间里，我们使用这篇文章中的方法在ATLAS Run-2数据中寻找这一过程，最终结果通过了ATLAS top分析组评审，与其它希格斯衰变结果结合之后给出了当前世界最好上限 ($1.1-1.2 \times 10^{-3}$)。 $t \rightarrow Hq(H \rightarrow \tau\tau)$ 是完全以清华为主要的分析，作者名单除了一位负责框架代码支持的欧洲人外，都属于清华（包括approval报告和内部通讯编辑），在这个课题上我们走过了从理论到实验的一条龙式的、以我为主的科研道路。



多变量分析方法给出的BDT变量在 $t \rightarrow H(\tau\tau)q$ 分析中一个信号区的分布。
摘自JHEP05 (2019) 123。

研究成果三

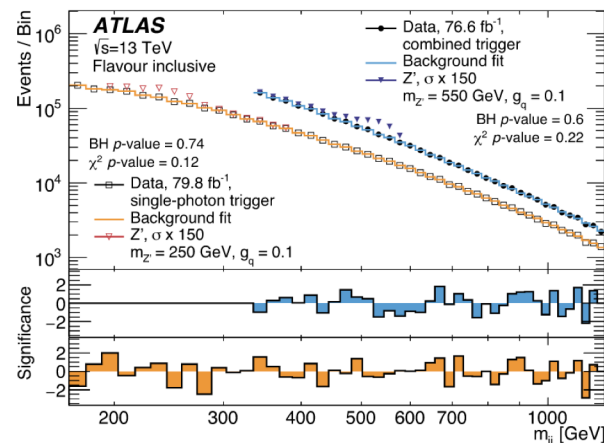
- 标准模型 Higgs 粒子没有诸如 $H \rightarrow e\tau$ 、 $H \rightarrow \mu\tau$ 等破坏轻子味道 (LFV) 的直接衰变, 但拥有扩展 Higgs sector 或卷曲额外维度等的超标准模型预言了较大的 LFV 效应, **探测 Higgs 的 LFV 衰变是对 Higgs 粒子性质的精确检验**。利用 ATLAS 36 fb^{-1} 数据, 我们寻找了在不同 Higgs 产生模式下 $H \rightarrow e\tau$ 和 $H \rightarrow \mu\tau$ 这两种信号。最后没有发现显著的信号存在, 给出了 ATLAS 目前最好的衰变分支比上线 ($H \rightarrow e\tau$ 上限 0.47%, $H \rightarrow \mu\tau$ 上限 0.28%)。我在标准模型本底计算、全局信号拟合等方面做出了重要贡献, **代表分析组在 Higgs plenary 会议上做了 approval 报告, 同时是这个分析文章的内部通讯编辑**。



多变量分析方法给出的决策树变量在 $H \rightarrow \mu\tau$ 分析中一个信号区的分布。摘自 Phys. Lett. B 800 (2020) 135069。

研究成果四

- 我和清华研究生张刚与美国华盛顿大学合作，在ATLAS双喷注加初态辐射(dijet+ISR)课题上展开合作。双喷注共振态是暗物质媒介子或Z'玻色子存在的必要条件，要求一个高动量的初态辐射(ISR)粒子可以大大降低背景。张刚在这一课题中是两位核心分析成员之一，代表dijet+ISR分析组在Exotics Jet plus Dark Matter会议上作approval报告。

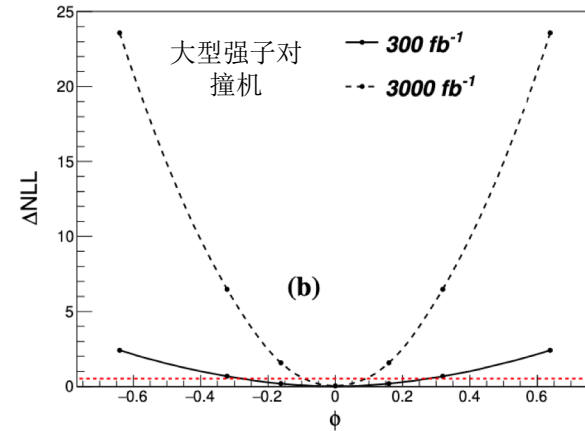


具有初态辐射光子的双强子喷注不变质量分布。黑色实点和空心方点来自同批数据，只是对应不同的探测器触发条件。摘自Phys. Lett. B 795 (2019) 56。

- 我和另一位研究生丁伟在无ISR的末态也进行了双喷注共振态寻找工作，这一末态主要探索质量更高的区域。相关结果正在JHEP评审。

研究成果五

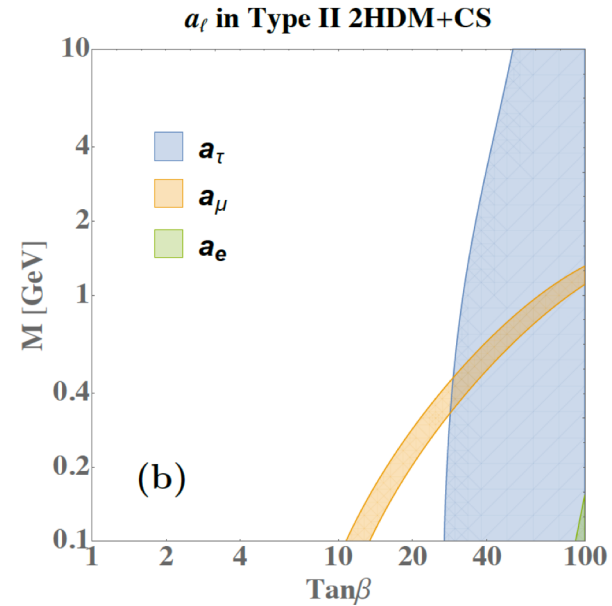
- 标准模型不能提供足够的CP破坏来解释宇宙中正反物质不对称，而Higgs粒子也许会提供额外的CP破坏源，从而打开研究新物理的一扇门。我提出了一种新方法，用来在未来正负电子对撞机Higgs工厂和大型强子对撞机LHC的数据中精确测量Higgs粒子CP混和角。利用ILC和CEPC这些未来对撞机的数据，或者高亮度LHC数据，通过精确重建tau轻子的衰变末态，包括不能探测到的中微子。我们提出的方法可以最优精度（ 5.2° ）指导未来LHC和正负电子对撞机上进行相关研究



ΔNLL 与CP混合角的依赖关系，一倍标准差通过蓝线与黑线两个焦点得到。摘自 Phys. Lett. B790 (2019) 332。

研究成果六

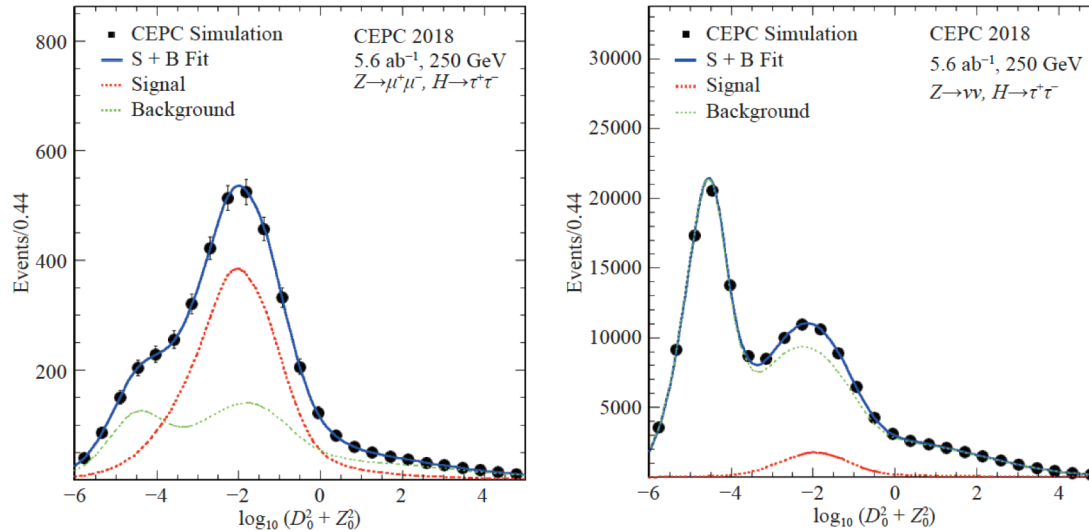
- 根据我们2017年发表文章的研究方法，我们尝试了在正负电子对撞机上利用 $e^+e^- \rightarrow \tau^+\tau^-$ 的过程来测量tau轻子的电偶极矩和反常磁矩。我们对tau轻子强衰变末态的中微子进行了重建，在此基础上构造了基于振幅矩阵元的可观测量，来区分标准模型预言和具有电偶极矩和反常磁矩的物理过程。我们预言在Belle-II 50 ab^{-1} 数据统计量下的测量精度： $|d_\tau| < 2.04 \times 10^{-19} \text{ e} \cdot \text{cm}$ ， $|\Delta a_\tau| < 1.75 \times 10^{-5}$ （标准模型中心值的1.5%）。我们研究了一些新物理模型，发现有些模型可以同时解释BNL g-2实验的疑似信号和tau轻子的g-2反常磁矩。



在Type II 2HDM+CS模型中三种轻子反常磁矩灵敏区域和最轻标量粒子质量与 $\tan\beta$ 的关系。摘自JHEP 10 (2019) 089。

研究成果七

- 我与博士研究生许悦参与了CEPC项目关于 $H \rightarrow \tau\tau$ 耦合精度的预言（ $H \rightarrow \tau\tau$ 信号可以达到**0.8-1.0%**的精度），是CEPC White Paper “Precision Higgs Physics at CEPC”中 $H \rightarrow \tau\tau$ 章节的通讯编辑。



利用碰撞参数和CEPC模拟数据对ZH($Z \rightarrow \mu\mu/\nu\nu$, $H \rightarrow \tau\tau$)信号进行拟合后的分布。
摘自Chin. Phys. C 43 (2019) 043002。

过去一年有重要贡献的会议论文 (ATLAS conf-note)

题目	Note编号	备注
Searches for lepton-flavour-violating decays of the Higgs boson in $\sqrt{s} = 13$ TeV pp collisions with the ATLAS detector	ATLAS-CONF-2019-013	https://cds.cern.ch/record/2674131 已发表 😊
Search for New Phenomena in Dijet Events using 139 fb^{-1} of pp collisions at $\sqrt{s} = 13$ TeV collected with the ATLAS Detector	ATLAS-CONF-2019-007	https://cds.cern.ch/record/2668385 待发表 😊
Test of CP invariance in vector-boson fusion production of the Higgs boson in the $H \rightarrow \tau\tau$ channel in proton-proton collisions at $\sqrt{s} = 13$ TeV with the ATLAS detector	ATLAS-CONF-2019-050	https://cds.cern.ch/record/2693960 待发表 😊

国际会议报告

1	"Searches for invisible Higgs at the LHC", 1 st Mediterranean Conference on Higgs Physics, Tangier, Morocco, 2019/09/23-26
2	"EDM and anomalous magnetic moment of tau at CEPC", the 2019 International Workshop on the High Energy CEPC, IHEP, Beijing, 2019/11/18-20

国内会议报告

1	"Probing the CP-Violation effects in the $h\tau\tau$ coupling at the LHC", 粒子物理标准模型及新物理精细计算研讨会2019, 河北保定, 2019/03/15-17
2	"Search for the EDM and anomalous magnetic moment of the tau lepton", 第十四届TeV物理工作组学术研讨会, 南京师范大学, 2019/04/19-22
3	"Search for a Heavy Higgs boson at the LHC", 第二届粒子物理前沿研讨会, 成都, 2019/06/07-11

会议组织

1	第十四届TeV物理工作组学术研讨会, 华南师范大学, 南京师范大学, 2019/04/19-22
2	第六届TeV实验物理暑期学校(International Summer School on TeV Experimental Physics – iSTEP), 华南师范大学, 广州, 2019/07/14-21
3	ATLAS Physics Workshop: Run 2 Physics - Reaching New Heights, CERN, Geneva, 2019/12/09-13

硅微条探测器升级项目

与中科院高能所合作，参与硅微条探测器升级项目，利用高能所万级洁净间开展研究项目，已经采购了微米级激光坐标仪、超景深成像显微镜、点胶机、高速芯片绑定机、绑定测试仪、探针台以及环境测试箱等，已经开始探测器模块的试研制和测试。研制过程包括前端读出和控制芯片与PCB板打线绑定，PCB板与传感器粘合，传感器与读出芯片打线绑定，在模块组装前后对其位置精度、机械、热导性能、老化性能、抗辐照性以及电子学性能等多方面的测试研究等。我们贡献设备和人力参与全部流程。

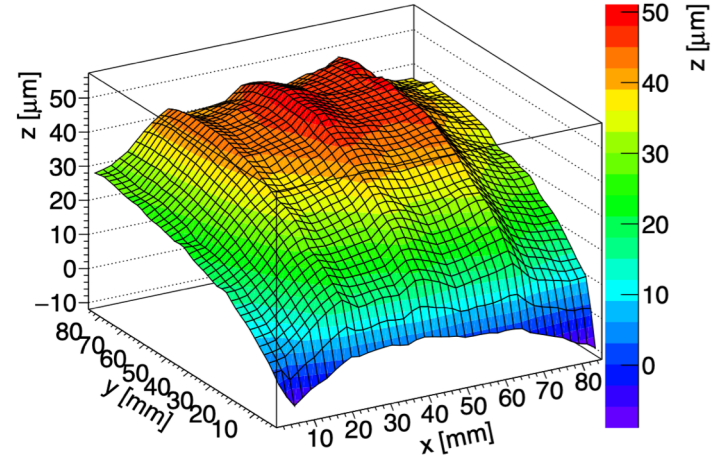


洁净间布局

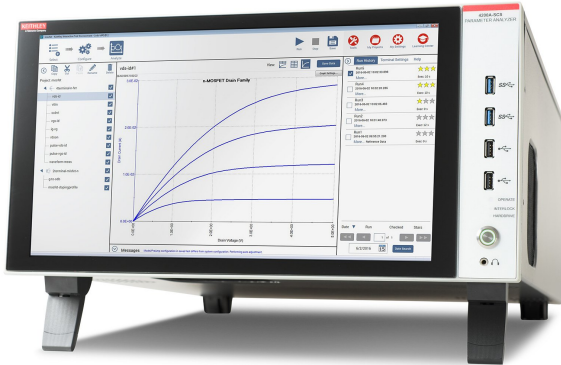
硅微条探测器升级项目



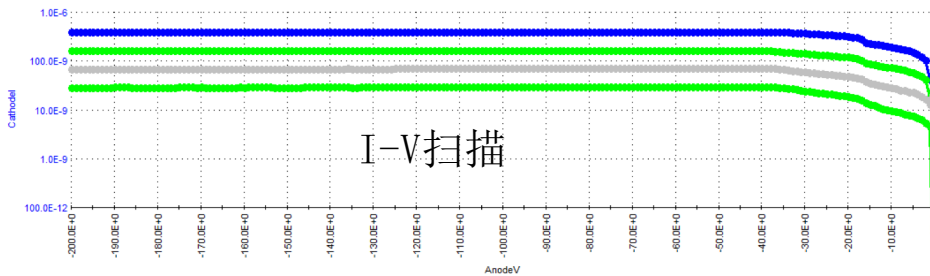
大尺寸sensor的扫描



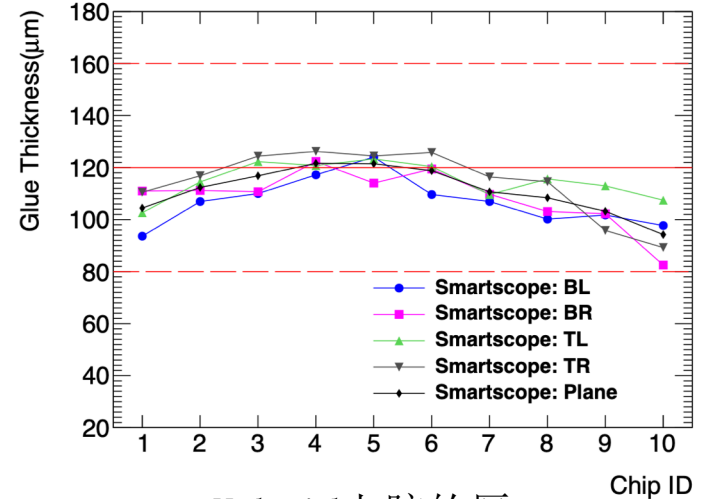
半导体分析仪



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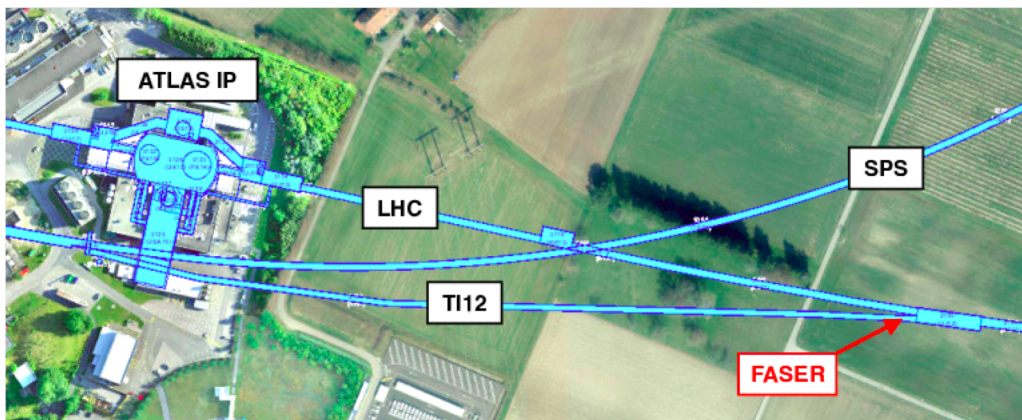
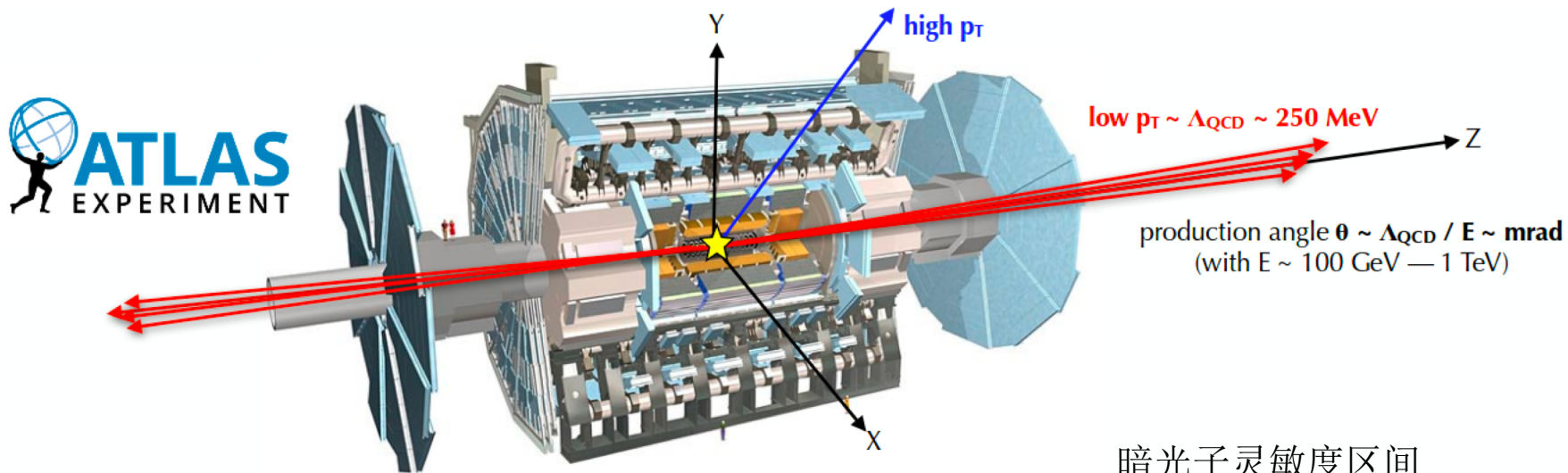


I-V扫描

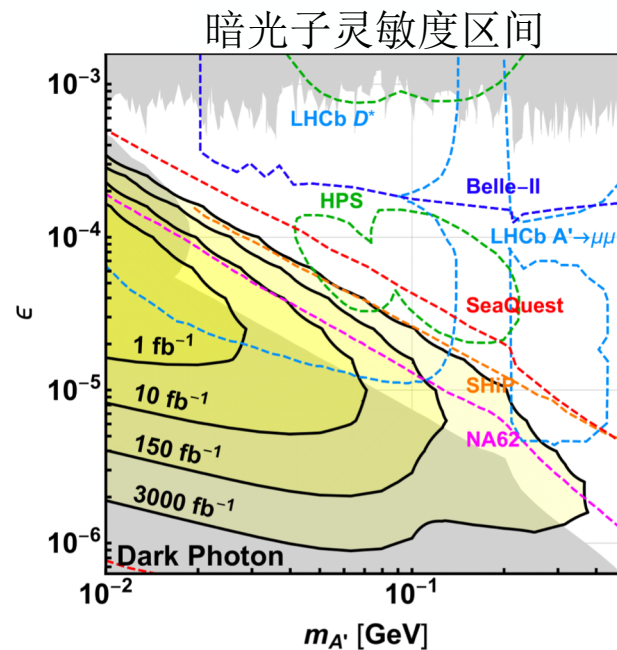


Hybrid上胶的厚度的测量

FASER实验



位于SPS-LEP隧道连接处，寻找类轴子、暗光子等长寿命粒子



FASER实验

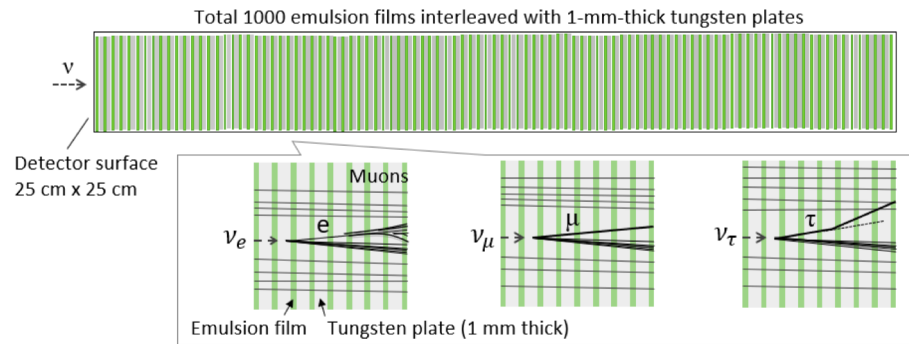
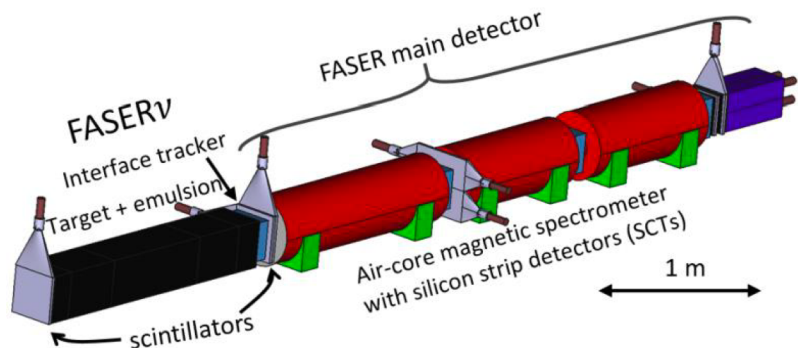
50个合作组成员，来自8个国家的18个创始成员单位

FASER INSTITUTIONS

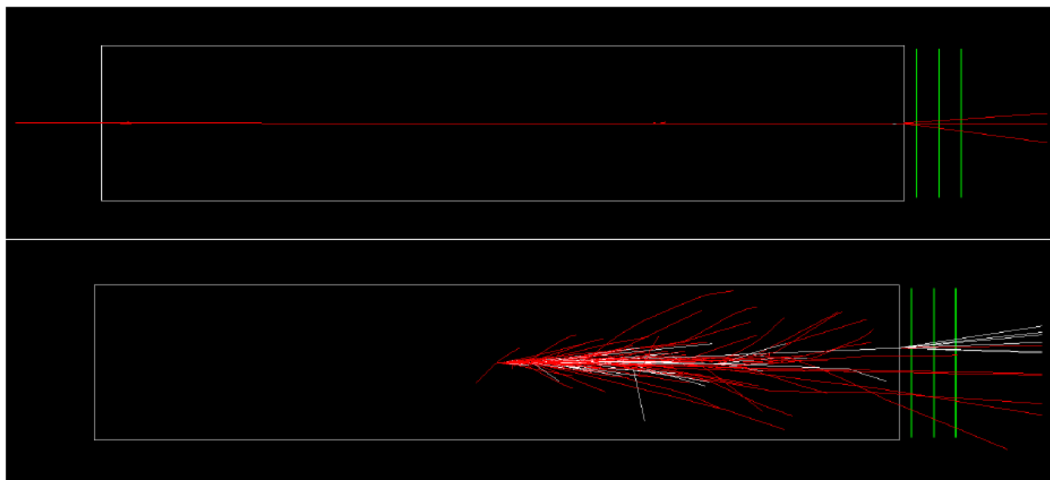


FASERnu实验

放置于FASER前端，将用来首次测量在对撞机中产生的中微子的截面！



Geant4模拟一个1 TeV μ 和一个1 TeV ν_μ 在乳胶探测器中的响应：



预期在Run 3（2021-2023）过程中能测到的中微子事例数：

	# of CC interactions	Mean interacting energy
$\nu_e + \bar{\nu}_e$	1296	827 GeV
$\nu_\mu + \bar{\nu}_\mu$	20439	631 GeV
$\nu_\tau + \bar{\nu}_\tau$	21	965 GeV

- 目前Technical Proposal已提交LHC实验委员会(LHCC)审批
- FASERnu文章已提交EPJC评审，第一轮意见Minor Modification

过去一年工作小结

- 发表论文7篇，其中实验4篇（通讯编辑2篇），理论3篇
- 发表CONF-Note 3篇，其中2篇是新结果，预计明年正式发表
- 国际会议报告2次，国内会议报告3次，国内外会议组织3次
- ATLAS硅微条探测器升级项目工作进展顺利
- 加入新的FASER和FASERnu实验，预期与LHC Run3同步运行

谢谢各位专家莅临指导！
Thanks You for your attention!

关于成果一文章的贡献证明

Information Discussion (82) Files

Internal Note

Report number	ATL-COM-PHYS-2018-264
Title	Cross-section measurement of Higgs bosons that decay to a pair of tau leptons in proton–proton collisions at $\sqrt{s} = 13$ TeV with the ATLAS detector
Author(s)	Andreazza, Attilio (INFN Milano and Universita' di Milano, Dipartimento di Fisica) ; Ayoub, Mohamad Kassem (Institute of High Energy Physics, Chinese Academy of Sciences) ; Barberio, Elisabetta Luigia (ARC Centre of Excellence in Particle Physics at the Terascale, School of Physics, The University of Melbourne) ; Becherer, Fabian Horst (Albert-Ludwigs-Universitaet Freiburg) ; Bechtel, Philip (University of Bonn) ; Blumenschein, Ulrike (Queen Mary University of London) ; Buat, Quentin (European Laboratory for Particle Physics, CERN) ; Cavasinni, Vincenzo (INFN Pisa and Universita' di Pisa, Dipartimento di Fisica) ; Chen, Xin (Tsinghua University) ; Coniavitis, Elias (Albert-Ludwigs-Universitaet Freiburg) <i>Show all 64 authors</i>
Imprint	22 Mar 2018. - mult. p.
Subject category	Particle Physics - Experiment
Accelerator/Facility, Experiment	CERN LHC ; ATLAS
Free keywords	Higgs ; tau lepton ; cross section ; measurement ; HIGGS
Abstract	A measurement of production cross sections of the Higgs boson in proton-proton collisions is presented in the $H \rightarrow \tau\tau$ decay channel. The analysis is performed using 36.1 fb^{-1} of data recorded by the ATLAS experiment at the Large Hadron Collider at a center-of-mass energy of $\sqrt{s} = 13$ TeV. All combinations of leptonic ($\tau \rightarrow \ell\nu\bar{\nu}$ with $\ell = e, \mu$) and hadronic ($\tau \rightarrow \text{hadrons } \nu$) tau decays are considered. The $H \rightarrow \tau\tau$ signal over the expected background from other Standard Model processes is established with an observed (expected) significance of 4.4 (4.1) standard deviations. Combined with results obtained using data taken at 7 and 8 TeV center-of-mass energies, the observed (expected) significance amounts to 6.4 (5.4) standard deviations and constitutes an observation of $H \rightarrow \tau\tau$ decays. Using the data taken at $\sqrt{s} = 13$ TeV, the total cross section in the $H \rightarrow \tau\tau$ decay channel is measured to be 3.71 ± 0.59 (stat.) $^{+0.87}_{-0.74}$ (syst.) pb, for a Higgs boson of mass 125 GeV assuming the relative contributions of its production modes as predicted by the Standard Model. Total cross sections in the $H \rightarrow \tau\tau$ decay channel are determined separately for vector boson fusion production and gluon-gluon fusion production to be 0.28 ± 0.09 (stat.) $^{+0.11}_{-0.09}$ (syst.) pb and 3.0 ± 1.0 (stat.) $^{+1.6}_{-1.24}$ (syst.) pb, respectively. Similarly, results are reported on a fit in the framework of simplified template cross sections. All measurements are in agreement with Standard Model expectations.

Email contact: christian.greife@cern.ch ; peter.wagner@cern.ch ; atlas-higg-2017-07-contact-editors@cern.ch

关于成果二文章的贡献证明

Information Discussion (22) Files

Internal Note

Report number	ATL-COM-PHYS-2018-396
Title	Search for top quark decays $t \rightarrow Hq$, with $H \rightarrow b\bar{b}, \tau^+\tau^-$, in proton-proton collisions at $\sqrt{s} = 13$ TeV with the ATLAS detector
Author(s)	Chen, Xin (Tsinghua University); Maria, Antonio (Georg-August-Universitat Goettingen, II. Physikalisches Institut); Li, Boyang (Tsinghua University); Xia, Ligang (University of Warwick, Coventry); Farooque, Trisha (Michigan State University, Department of Physics and Astronomy); Gerbaudo, Davide (Institut de Fisica d'Altes Energies (IFAE), The Barcelona Institute of Science and Technology, Barcelona, Spain); Juste Rozas, Aurelio (Institut de Fisica d'Altes Energies (IFAE), The Barcelona Institute of Science and Technology, Barcelona, Spain); Orlando, Nicola (The University of Hong Kong); Peng, Chen (The University of Hong Kong); Pereira Sanchez, Laura (Institut de Fisica d'Altes Energies (IFAE), The Barcelona Institute of Science and Technology, Barcelona, Spain) Show all 19 authors
Imprint	13 Apr 2018. - mult. p.
Subject category	Particle Physics - Experiment
Accelerator/Facility, Experiment	CERN LHC ; ATLAS
Free keywords	TOP
Abstract	<p>A search for flavour-changing neutral current decays of a top quark into an up-type quark ($q = u, c$) and the Standard Model Higgs boson, $t \rightarrow Hq$, is presented. The search is based on a dataset of pp collisions at $\sqrt{s} = 13$ TeV recorded in 2015 and 2016 with the ATLAS detector at the CERN Large Hadron Collider and corresponds to an integrated luminosity of 36.1 fb^{-1}. Two complementary analyses are performed that search for top-quark pair events in which one top quark decays into Wb and the other top quark decays into Hq, and target the $H \rightarrow b\bar{b}$ and $H \rightarrow \tau^+\tau^-$ decay modes, respectively. The high multiplicity of b-quark jets, or the presence of hadronically decaying tau leptons, are exploited in the two analyses respectively. Multivariate techniques are used to separate the signal from the background, which is dominated by top-quark pair production. No significant excess of events above the background expectation is found, and 95% CL upper limits on the $t \rightarrow Hq$ branching ratios are derived. The combination of these searches with ATLAS searches in diphoton and multilepton final states significantly improves the sensitivity, yielding observed (expected) 95% CL upper limits on the $t \rightarrow Hc$ and $t \rightarrow Hu$ branching ratios of 1.1×10^{-3} (8.3×10^{-4}) and 1.2×10^{-3} (8.3×10^{-4}), respectively. The corresponding combined observed (expected) upper limits on the λ_{tcH} and λ_{tuH} couplings are 0.064 (0.055) and 0.066 (0.055) respectively. These are the most restrictive direct bounds on tqH interactions measured so far.</p>


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Information Discussion (55) Files

Internal Note

Report number	ATL-COM-PHYS-2017-1030
Title	Search for flavor-changing neutral currents in the top-quark decays $t \rightarrow Hq$ with $H \rightarrow \tau^+\tau^-$ in proton-proton collisions at $\sqrt{s} = 13$ TeV
Author(s)	Chen, Xin (Tsinghua University)  ; Xia, Ligang (Tsinghua University) (+) ; Li, Boyang (Tsinghua University) (+) ; De Maria, Antonio (Georg-August-Universitat Goettingen, II. Physikalisches Institut) (+) ; Zhang, Gang (Tsinghua University) (+)
Imprint	10 Jul 2017. - 44 p.
Subject category	Particle Physics - Experiment
Accelerator/Facility, Experiment	CERN LHC ; ATLAS
Free keywords	FCNC , top , Higgs , tautau ; TOP
Abstract	A search is presented for flavor-changing neutral currents in top-quark decays $t \rightarrow Hq$ with $H \rightarrow \tau^+\tau^-$ using a data set collected with the ATLAS detector at the LHC, corresponding to an integrated luminosity of 36.1 fb^{-1} of proton-proton collisions at a center-of-mass energy of 13 TeV. The search is performed in the decay chain $t\bar{t} \rightarrow Wb + Hq$ ($q = c/u$), where the W boson decays hadronically. Upper limits at 95% confidence level for the branching ratios of $t \rightarrow Hc$ and $t \rightarrow Hu$ are measured to be 0.19% and 0.17%, while the expected limits are $0.21^{+0.11}_{-0.06}$ % and $0.20^{+0.10}_{-0.06}$ %, respectively.

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Information	Discussion (40)	Files
 Internal Note		
Report number	ATL-COM-PHYS-2017-452	
Title	Search for lepton-flavour-violating decays of the Higgs boson in 13 TeV collisions with the ATLAS Detector	
Author(s)	Andreazza, Attilio (INFN Milano and Universita' di Milano, Dipartimento di Fisica) (+) ; Ayoub, Mohamad Kassem (Institute of High Energy Physics, Chinese Academy of Sciences) (+) ; Banerjee, Swagato (University of Louisville) (+) ; Barberio, Elisabetta Luigia (ARC Centre of Excellence in Particle Physics at the Terascale, School of Physics, The University of Melbourne) (+) ; Becherer, Fabian Horst (Albert-Ludwigs-Universitaet Freiburg) (+) ; Biswas, Diptaparna (University of Louisville) (+) ; Buat, Quentin (European Laboratory for Particle Physics, CERN) (+) ; Cavasinni, Vincenzo (INFN Pisa and Universita' di Pisa, Dipartimento di Fisica) (+) ; Chen, Xin (Tsinghua University) (+) ; Coniavitis, Elias (Albert-Ludwigs-Universitaet Freiburg) (+) <i>Show all 49 authors</i>	
Imprint	29 Apr 2017. - mult. p.	
Subject category	Particle Physics - Experiment	
Accelerator/Facility, Experiment	CERN LHC ; ATLAS	
Free keywords	LFV ; HIGGS	
Abstract	A direct search for lepton flavour violation in decays of the Higgs boson with the ATLAS detector at the LHC is presented. $H \rightarrow e\tau$ and $H \rightarrow \mu\tau$ decays are considered. The searches are based on the data sample of pp collisions collected by the ATLAS detector corresponding to an integrated luminosity of 36 fb^{-1} at a centre-of-mass energy of $\sqrt{s} = 13 \text{ TeV}$. No significant excess is observed and upper limits on the lepton-flavour-violating branching ratios are set.	
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Information	Discussion (37)	Files
 Internal Note		
Report number	ATL-COM-PHYS-2018-228	
Title	Search for resolved dijet resonances produced in association with a photon	
Author(s)	Alison, John (University of Chicago, Enrico Fermi Institute) (+) ; Barnes, Sarah Louise (Shanghai Jiao Tong University) (+) ; Boveia, Antonio (Ohio State University) (+) ; Corrigan, Eric Edward (Lunds universitet, Fysiska institutionen) (+) ; Daneri, Maria Florencia (Universidad de Buenos Aires) (+) ; Devesa, Maria Roberta (Universidad de Buenos Aires) (+) ; Doglioni, Caterina (Lunds universitet, Fysiska institutionen) (+) ; Dong, Binbin (Tsinghua University) (+) ; Guest, Daniel (University of California, Irvine) (+) ; Hsu, Shih-Chieh (Department of Physics, University of Washington, Seattle) (+) ; Jinaru, Adam (Horia Hulubei National Institute of Physics and Nuclear Engineering) (+) ; Kalderon, Charles William (Lunds universitet, Fysiska institutionen) (+) ; Krizka, Karol (Lawrence Berkeley National Laboratory and University of California, Berkeley) (+) ; Li, Zhiying (Lunds universitet, Fysiska institutionen) (+) ; Meehan, Samuel (Department of Physics, University of Washington, Seattle) (+) ; Ng, Ying Wun Yvonne (University of California, Irvine) (+) ; Nishu, Nishu (Shanghai Jiao Tong University) (+) ; Otero y Garzon, Gustavo (Universidad de Buenos Aires) (+) ; Pachal, Katherine (Simon Fraser University) (+) ; Tudorache, Valentina (Horia Hulubei National Institute of Physics and Nuclear Engineering) (+) ; Tudorache, Alexandra (Horia Hulubei National Institute of Physics and Nuclear Engineering) (+) ; Zhang, Gang (Tsinghua University) (+) ; Chen, Xin (Tsinghua University) (+) ; Tolley, Emma (Ohio State University) (+) ; Zhou, Ning (Shanghai Jiao Tong University) (+) <i>Hide</i>	
Imprint	13 Mar 2018. - mult. p.	
Subject category	Particle Physics - Experiment	
Accelerator/Facility, Experiment	CERN LHC ; ATLAS	
Free keywords	EXOTICS	
Abstract	This note describes a new search for low mass dijet resonances produced in association with a high p_T photon. The search uses the full 2015--2017 datasets collected by ATLAS at $\sqrt{s} = 13$ TeV. Two cases are considered in the analysis: an inclusive selection and a selection requiring that the two jets from the candidate resonance are both tagged as b -jets. A smoothly falling background estimate is produced via a sliding window fit and the differences between the data and fit will be examined for evidence of new physics. The results will be used to set limits on a benchmark Z' model as well as on a generic Gaussian shape.	
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