第十五届 QCD相变与相对论重离子物理研讨会

中国 · 珠海 Zhuhai, China

2023年12月15–19日 December 15–19, 2023

目录

会议日程

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HENPIC symposium, 国宴厅, Chair: Enke Wang		
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8:35-8:40	HENPIC Opening	Yugang Ma
8:40-9:10	HENPIC Overview	TBA
9:10-10:00	Photo and Coffee Break	
10:00-10:40	Spin polarization and chiral effect **Chair: Qun Wang**	Jinfeng Liao, Xu Sun
10:40-11:30	Jet and heavy flavor **Chair: Ben-Wei Zhang**	Guangyou Qin, Yaxian Mao, Qipeng Hu
11:30-12:10	From heavy ion to EIC **Chair: Zuotang Liang**	Weiyao Ke, Jinlong Zhang
12:10-12:20	Summary	Pengfei Zhuang
12:30-14:00	Lunch, 国会鱼港大厅，3rd floor	
12.15 afternoon		
QPT poster, 国宴厅		
14:30-16:00	QPT poster	
16:00-16:30	Coffee Break	
16:30-18:00	Free Discussion	
18:00-20:00	Dinner, 国会鱼港大厅, 3rd floor	

12.16 morning		
QPT plenary, 国宴厅, Convener: 马余刚		
8:30-8:40	QPT opening	王恩科
8:40-9:10	STAR and sPHENIX overview	陈金辉
9:10-9:40	ALICE overview	彭忻烨
9:40-10:10	LHCb overview	朱相雷
10:10-10:40	Coffee Break	
QPT plenary, 国宴厅, Convener: 周代翠		
10:40-11:10	CMS highlights	陈震宇
11:10-11:40	QCD Phase transition from lattice	张瑜
11:40-12:10	QCD phase transition from effective models	曹高清
12:30-14:00	Lunch, 国会鱼港大厅，3rd floor	
12.16 afternoon		
QPT plenary, 国宴厅, Convener: 王福强		
14:00-14:30	Holographic QCD	黄梅
14:30-15:00	CME experiment	赵杰
15:00-15:30	Spin transport theory	施舒哲
15:30-16:00	Coffee Break	
QPT plenary, 国宴厅, Convener: 庄鹏飞		
16:00-16:30	Heavy flavor physics	曹杉杉
16:30-17:00	UPC physics	唐泽波
17:00-17:30	EIC physics	周剑
18:00-20:00	Dinner, 国会鱼港大厅, 3rd floor	

12.17 morning		
QPT parallel I, 国会厅		
Topics	**Phase diagram, Convener: 丁亨通**	
9:00-9:20	Unveiling the dynamics of little-bang nucleosynthesis	KaiJia Sun
9:20-9:40	Light Nuclei Production in Au+Au Collisions at 14.6 and 19.6 GeV from RHIC BES-II	Yixuan Jin
9:40-10:00	Mass spectra of meson nonet (pions, kaons, \eta and \eta') and the related QCD phase transitions under external magnetic field	Shijun Mao
10:00-10:20	Bubble dynamics in a first-order quark-hadron transition	Hong Mao
10:20-10:50	Coffee Break	
Topics	**Phase diagram, Convener: 马国亮**	
10:50-11:10	The QCD phase transition intrigued by turbulence	Anping Huang
11:10-11:30	高温高密 QCD 物质中守恒荷涨落性质的输运模型研究	Qian Chen
11:30-11:50	fRG study of QCD phase structure under rotation	Haolei Chen
11:50-12:10	Coupling strength induced BCS-BEC crossover on phase boundary of pion superfluid	Zhiyang Liu
12:30-14:00	Lunch, 国会鱼港大厅, 3rd floor	
12.17 afternoon		
QPT parallel I, 国会厅		
Topics	**Phase diagram, Convener: 罗晓峰**	
14:00-14:20	The nonequilibrium evolution near the phase boundary	Xiaobing Li
14:20-14:40	Net baryon number fluctuations established by rapidity scan of an inhomogeneous system from statistical thermal models	Jianing Li
14:40-15:00	Fluctuations of conserved charges in strong magnetic fields in (2+1)-flavor QCD	Jinbiao Gu
15:00-15:20	Microscopic Encoding of Macroscopic Universality: Scaling Properties of Dirac Eigenspectra near QCD Chiral Phase Transition	Weiping Huang
15:20-15:40	Functional renormalization group study of the quark-meson model with ω and ρ vectors meson	Wentao Wang
15:40-16:10	Coffee Break	
QPT parallel I, 国会厅		
Topics	**Phase diagram, Convener: 付伟杰**	
16:10-16:30	Recent progress on intermittency analysis in relativistic heavy-ion collisions	Zhiming Li
16:30-16:50	Functional renormalization group study of neutral and charged pion under magnetic fields in the quark-meson model	Rui Wen
16:50-17:10	Dilepton production enhancement from the first-order chiral phase transition	Wenhao Zhou
17:10-17:30	Energy Dependence of Intermittency for Charged Hadrons in Au+Au Collisions from the STAR Experiment at RHIC	Jin Wu
17:30-17:50	Track finding algorithm for the TPC detector at CEE experiment	Aiqiang Guo
18:00-21:00	Banquet, 国宴厅, 5rd floor	

12.17 morning		
QPT parallel II, 国兴厅		
Topics	**Heavy flavor, Convener: 张一飞**	
9:00-9:20	“准”夸克胶子等离子体中重夸克碰撞能量损失的研究	Yun Guo
9:20-9:40	Scaling behaviors of heavy flavor meson suppression and flow in different nuclear collision systems at the LHC	Shuqing Li
9:40-10:00	Multiplicity dependence of σψ(2S)/σJ/ψ in pp collisions at √s = 13 TeV	Youen Kang
10:00-10:20	Flavor hierarchy of parton energy loss in quark-gluon plasma from a Bayesian analysis	Wenjing Xing
10:20-10:50	Coffee Break	
Topics	**Heavy flavor, Convener: 廖劲峰**	
10:50-11:10	Exotic hadron production and heavy quark polarization in HIC	Baoyi Chen
11:10-11:30	J/ψ production in pp collisions with the PACIAE model	Wenchao Zhang
11:30-11:50	Constraining the equation of state with heavy quarks in the quasi-particle model of QCD matter	Fenglei Liu
11:50-12:10	Exploring dead-cone effect on heavy-quark medium-induced gluon radiations	Mingze Li
12:30-14:00	Lunch, 国会鱼港大厅, 3rd floor	
12.17 afternoon		
QPT parallel II, 国兴厅		
Topics	**Spin polarization, Convener: 林树**	
14:00-14:20	Spin alignment for K mesons	Shi Pu
14:20-14:40	Vector meson polarization measurements in pp and Pb-Pb collisions with ALICE at the LHC	Xiaozhi Bai
14:40-15:00	Spin Polarization, Anomalous Magnetic Moment and Transportation in the magnetized QCD background	Shengqin Feng
15:00-15:20	Measurements of J/ψ polarization and global spin alignment in Ru+Ru and Zr+Zr collisions at $\sqrt{s_{NN}} = 200$ GeV from the STAR experiment	Qian Yang
15:20-15:40	Measurements of Global and Local Polarization of Hyperons in Heavy Ion Collisions from STAR	Xingrui Gou
15:40-16:10	Coffee Break	
QPT parallel II, 国兴厅		
Topics	**Spin polarization, Convener: 黄旭光**	
16:10-16:30	A topological realization of spin polarization through vortex formation in collisions of Bose-Einstein condensates	Jian Deng
16:30-16:50	Polarized hadron production in unpolarized high energy collisions	Shu-yi Wei
16:50-17:10	Thermodynamics for a Rotating Chiral Fermion System in the Uniform Magnetic Field	Ren-Hong Fang
17:10-17:30	Full-order mode analysis within a mutilated relaxation time approximation	Jin Hu
17:30-17:50	Spin hydrodynamics, entropy principle and fluctuations	Lixin Yang
18:00-21:00	Banquet, 国宴厅, 5rd floor	

12.17 morning		
QPT parallel III, 国旺厅		
Topics	**Jet, Convener: 张本威**	
9:00-9:20	Momentum and angular correlations in Z/gamma-hadron production in relativistic heavy-ion collisions	Hanzhong Zhang
9:20-9:40	Deep learning jet modifications in heavy-ion collisions	Yilun Du
9:40-10:00	Are gluon showers inside a quark-gluon plasma strongly coupled? a theorist's test	Omar Elgedawy
10:00-10:20	Observation of medium-induced yield enhancement and acoplanarity broadening via h-jet correlations with ALICE	Yongzhen Hou
10:20-10:50	Coffee Break	
Topics	**Jet, Convener: 邢宏喜**	
10:50-11:10	Imaging constituent quark shape of proton with exclusive vector meson production at HERA	Wenchang Xiang
11:10-11:30	Flavor dependence of jet quenching in heavy-ion collisions	Shanliang Zhang
11:30-11:50	Enhancement of baryon-to-meson ratios around jets as a signature of medium response	Ao Luo
11:50-12:10	Transverse momentum balance of dijets in Xe+Xe collisions at the LHC	Yao Li
12:30-14:00	Lunch, 国会鱼港大厅, 3rd floor	
12.17 afternoon		
QPT parallel III, 国旺厅		
Topics	**Flow & Correlation, Convener: 寿齐烨**	
14:00-14:20	Systematic study of flow harmonics via di-hadron correlations at in p+Au, d+Au and ^{3}He+Au collisions at 200 GeV	Maowu Nie
14:20-14:40	Correlations in non-uniform temperature system	Lijia Jiang
14:40-15:00	Elliptic anisotropy of hard probes from parton scatterings in small collision systems	Siyu Tang
15:00-15:20	Elliptic anisotropy measurement of the $\mathrm{f}_0(980)$ hadron in proton-lead collisions and evidence of its quark-antiquark composition by CMS	An Gu
15:20-15:40	The anisotropic flow of identified particles in Au+Au collisions at $\sqrt{s_{NN}}$ = 3 - 19.6 GeV from RHIC-STAR	Xing Wu
15:40-16:10	Coffee Break	
QPT parallel III, 国旺厅		
Topics	**Theoretical Developments, Convener: 侯德富**	
16:10-16:30	Understanding the transverse-momentum-dependent observables in hard processes in pA and eA	Weiyao Ke
16:30-16:50	Probing the Short-Distance Structure of the Quark-Gluon Plasma with Energy Correlators	Zhong Yang
16:50-17:10	Rapidity and azimuthal correlations of strong color field	Mingmei Xu
17:10-17:30	Nuclear cluster structure effect in O+O collisions at RHIC energy	Xin-Li Zhao
17:30-17:50	The relation of global polarization and directed flow in Au+Au collisions at RHIC	Ze-Fang Jiang
18:00-21:00	Banquet, 国宴厅, 5rd floor	

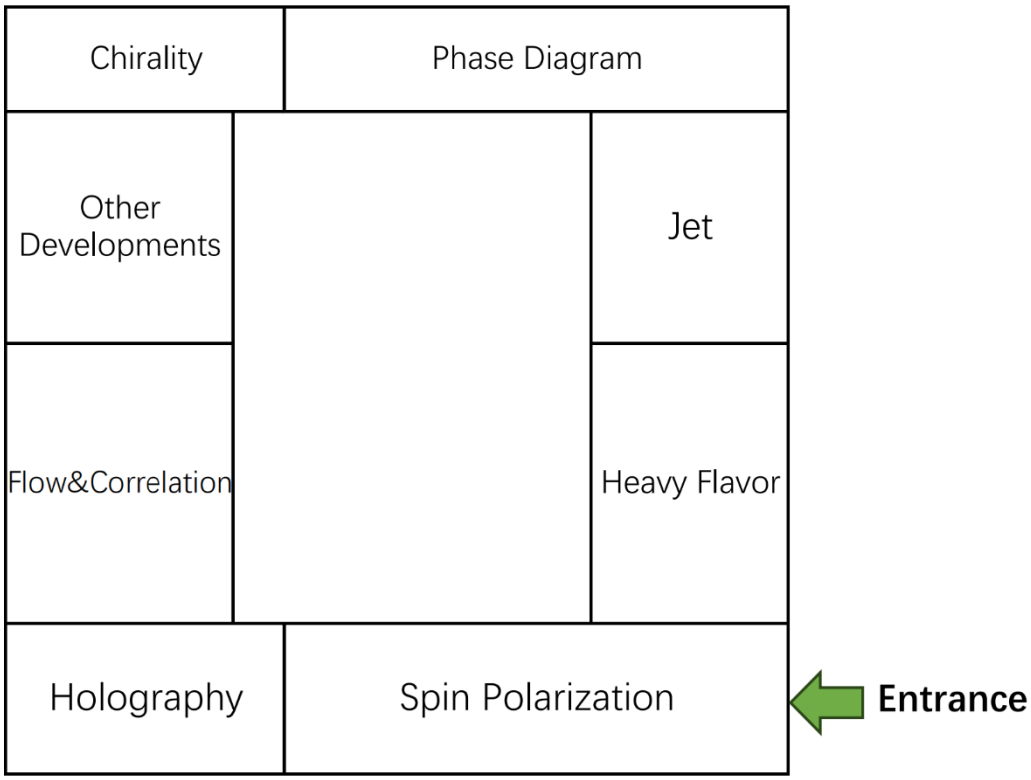
12.18 morning		
QPT parallel I, 国会厅		
Topics	**Hard Probes, Convener: 查王妹**	
9:00-9:20	Recent measurements of the electromagnetic probes at RHIC	Chi Yang
9:20-9:40	Collision-energy dependence of the Breit-Wheeler process in heavy-ion collisions and its application to nuclear charge radius measurements	Xiaofeng Wang
9:40-10:00	Measuring QGP temperature with thermal dielectrons with STAR BES-II data	Zhen Wang
10:00-10:20	A UV-Regulated Theory of Diffusion	Navid Abbasi
10:20-10:50	Coffee Break	
Topics	**Theoretical Developments，Convener: 徐庆华**	
10:50-11:10	Decay contributions to the parity-odd fragmentation functions	Yu-Kun Song
11:10-11:30	Spin alignment induced by spin density fluctuation	Kun Xu
11:30-11:50	探索中子星内部可能的强子夸克相变	Pianpian Qin
11:50-12:10	Medium-Assisted Enhancement of Exotic Hadron Production from Small to Large Colliding Systems	Yu Guo
12:10-14:00	Lunch, 国会鱼港大厅, 3rd floor	

12.18 morning		
QPT parallel II, 国兴厅		
Topics	**Chirality, Convener: 高建华**	
9:00-9:20	Magneto-birefringence and axial Ward identity at finite temperature and density	Koichi Hattori
9:20-9:40	Chiral vortical catalysis	Yin Jiang
9:40-10:00	Search for the Chiral Magnetic Effect with Forced Match of Multiplicity and Elliptic Flow in Isobar Collisions at STAR	Yufu Lin
10:00-10:20	The role of neutral and charged pions in (inverse) magnetic catalysis and diamagnetism	Jie Mei
10:20-10:50	Coffee Break	
Topics	**Theoretical Developments，Convener: 严力**	
10:50-11:10	N-particle irreducible actions for stochastic fluids	Jingyi Chao
11:10-11:30	(Magneto-)thermoelectric effects in QCD medium with multiple conserved charges	Hexia Zhang
11:30-11:50	Production of $X_{cs\bar{c}\bar{s}}$ in heavy ion collisions	Yuanyuan Hu
11:50-12:10	Quantum computing for parton fragmentation functions	Tianyin Li
12:10-14:00	Lunch, 国会鱼港大厅, 3rd floor	

12.18 morning		
QPT parallel III, 国旺厅		
Topics	**Holography, Convener: 李丹凝**	
9:00-9:20	Searching CEP in a holographic model with machine learning	Xun Chen
9:20-9:40	Light quark jet quenching in higher derivative gravity	Ziqiang Zhang
9:40-10:00	Pion dynamics in a soft-wall AdS-QCD model	Xuanmin Cao
10:00-10:20	Critical endpoint dynamics in 2-flavor holographic QCD: Understanding critical phenomena	Yanqing Zhao
10:20-10:50	Coffee Break	
Topics	**Theoretical Developments, Convener: 刘绘**	
10:50-11:10	Bubble nucleation and gravitational waves from holography	Yidian Chen
11:10-11:30	Holographic imaginary potential of a quark antiquark pair in the presence of gluon condensation	Sara Tahery
11:30-11:50	Investigating high energy proton-proton collisions with a multi-phase transport model coupled with PYTHIA8 initial conditions	Liang Zheng
11:50-12:10	Validation of GPU-acclerated parton cascade with elliptic flow	Qingjun Liu
12:10-14:00	Lunch, 国会鱼港大厅, 3rd floor	

12.18 afternoon		
QPT plenary, 国宴厅, Convener: 黄焕中		
14:00-14:30	Exploring Nuclear Structure from Relativistic Heavy Ion Collisions	宋慧超
14:30-15:00	Machine learning in QCD	王凌霄
15:00-15:30	Quantum computing in QCD	郭星雨
15:30-16:00	Coffee Break	
QPT plenary, 国宴厅, Convener: 许怒		
16:00-16:30	JET physics	贺亚运
16:30-17:00	HIAF and CEE	余玉洪
17:00-17:20	Flash Talk	
17:20-17:25	Next QPT	
17:25-17:40	Awards	
18:00-20:00	Dinner, 国会鱼港大厅, 3rd floor	

海报分区


Chirality
Phase Diagram
Other Developments
Jet
Flow&Correlation
Heavy Flavor
Holography
Spin Polarization
Entrance

华南师范大学量子物质研究院简介

华南师范大学物理学于2017年入选国家“双一流”建设学科，粒子物理与原子核物理是学校“双一流”建设规划的重点发展方向。校长王恩科教授为负责人的物理学科教师团队入选第三批“全国高校黄大年式教师团队”。

量子物质研究院成立于2018年7月，由校长王恩科教授担任首任院长。研究院早期建设主要布局在粒子物理与原子核物理学科的5个研究方向：重离子碰撞物理、粒子物理唯象学、核子结构、高能物理实验和格点场论。研究院还逐渐拓展新的交叉研究领域，如与量子计算和机器学习的交叉研究，现已形成多方向协同发展的良好势头。

研究院现有长聘教师13人，青年英才和博士后16人，其中包括国家杰出青年基金获得者2人、长江学者特聘教授1人，国家“四青人才”4人，长聘教师中国家级人才约占50%。研究院现有科研人员均具有海外工作或学习经历，40岁以下科研人员占比达86%，是一支朝气蓬勃的国际化研究团队。

研究院基于交叉学科融合模式，着力开展有组织的科研，建设成效显著。与我校物理学院联合建设科研平台，2019年获批“广东省核物质科学与技术重点实验室”，2020年获批我校首个粤港澳联合实验室—“粤港量子物质联合实验室”，2023年获批“原子亚原子结构与量子调控教育部重点实验室”，同年获批“广东省高等学校物质结构与相互作用基础研究卓越中心”。华南师范大学与中国科学院近代物理研究所联合成立南方核科学计算中心，目前已完成一期建设，算力达到2.3PFlops，为国内核物理领域提供优质的计算资源。

研究院深度参与国际合作交流，已成为欧洲核子中心大型强子对撞机上的LHCb和CMS国际实验合作组、北京正负电子对撞机上的BESIII国际实验合作组、美国相对论重离子对撞机上的STAR国际实验合作组的正式成员。

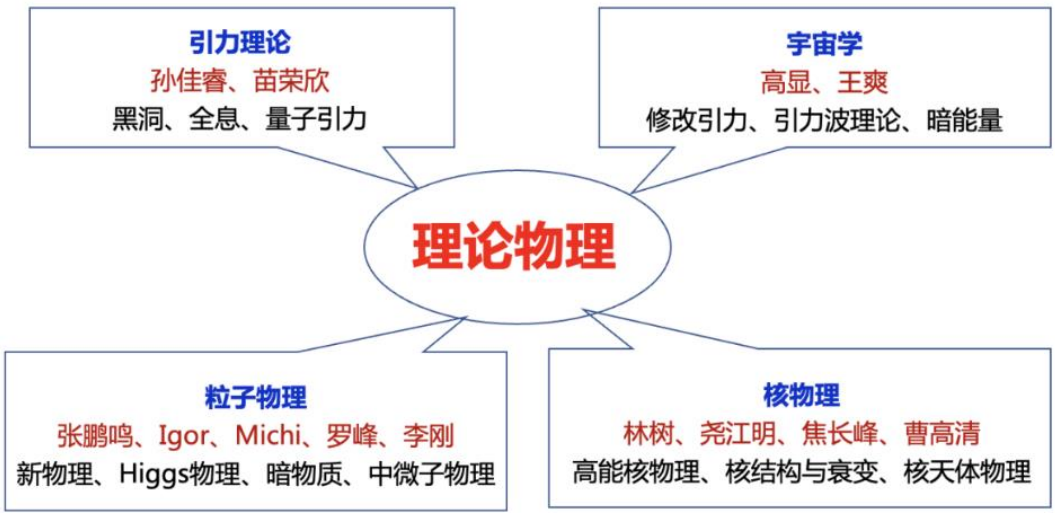
量子物质研究院的发展将助推华南师大物理学一流学科建设和广东省高水平大学建设，满足广东省及粤港澳大湾区对于物理学科基础研究的需求，为广东省创新驱动战略和经济社会转型提供有力的支撑。

中山大学物理与天文学院简介

中山大学物理与天文学院拥有悠久天文研究历史，1927年中山大学创办了国内首个天文学系，1929年在今广州越秀山修建了中大天文台。1952年院系调整，中山大学天文学系整体并入南京大学。2013年12月28日中山大学成立天文与空间科学研究院，复办中山大学天文学科。2015年9月16日，中山大学物理与天文学院在珠海校区成立。2019年12月7日，学院复办天文系并开始招收天文学本科生。

学院现有专任教师80余人（教授29人），其中两院院士2人（含1名兼职），国家杰出青年基金获得者3人，优秀青年基金获得者2人，国家高层次人才计划6人，广东特支计划百千万工程领军人才1名，中山大学“百人计划”引进约60人，还有专职科研人员及博士后40余人。

根据中山大学对珠海校区“提增量”的定位，以及发展深海、深空、深地、深蓝等学科群的总体布局，学院已经初步形成“123”中长期发展规划，即依托天琴空间引力波探测计划、中国空间站工程巡天望远镜粤港澳大湾区科学中心两大国家级研究平台和广东省量子精密测量与传感重点实验室一个省部级平台，引领中山大学珠海校区的“深空”1个学科群，支撑物理学和天文学2个一级学科，重点发展以理论物理为支撑的引力物理、天体物理、量子物理3个研究方向，为此学院组建了理论物理、天琴、天文、量子物理等4个研究团队。



暨南大学物理与光电工程学院简介

暨南大学物理与光电工程学院创建于 1926 年，是暨南大学历史最悠久的学院之一。学院恪守“忠信笃敬”的校训，弘扬“尚德明理、笃学精工、务实求真、兼怀鼎新”的学院精神，守正创新，拼搏进取，正在一流理工科建设的新征程上昂首迈进。

学院现设有 5 个教学科研单位：物理学系、光电工程系、光子技术研究院、纳米光子学研究院和新能源技术研究院。现有职教工 248 人，研究生 729 人，本科生 971 人。设有应用物理学、光电信息科学与工程和光电信息科学与工程（创新班）3个本科专业；物理学、光学工程 2 个一级学科博士点及物理学、光学工程等硕士学位点。其中物理学博士点下设理论物理、凝聚态物理、新能源材料物理和光学四个研究方向，研究内容包括粒子物理、高能核物理、宇宙学、引力与黑洞物理、计算物理、新能源材料、光电材料器件、太阳能电池等。

量子物质研究院
Institute of Quantum matter

物理与天文学院
School of Physics and Astronomy

物理与光电工程学院
College of Physics and Optoelectronic Engineering