

## PROGRAMME

### Day 1 (December 16, Monday)

#### Opening and Welcome speech

09:30 - 09:40 Welcome speech  
**Wang Yao (Conference co-chair)**

#### Morning session 1

*Chaired by Maohai Xie (The University of Hong Kong)*

09:40 - 10:10 To screen or not to Screen: Correlated Electron Systems  
**Chun Ning Lau (The Ohio State University)**  
10:10 - 10:40 Signatures of integer and fractional Chern insulators in twisted MoTe<sub>2</sub> trilayers  
**Weibo Gao (Nanyang Technological University)**  
10:40 - 11:00 Break

#### Morning session 2

*Chaired by Shuang Zhang (The University of Hong Kong)*

11:00 - 11:30 Van der Waals Heterostructures and Superlattices Beyond 2D Materials: the Bo(u)ndless Frontier  
**Xiangfeng Duan (University of California, Los Angeles)**  
11:30 - 12:00 Hidden phases in kagome metal CsV<sub>3</sub>Sb<sub>5</sub> and correlated superconductor 6R-TaS<sub>2</sub>  
**Jian-Hao Chen (Peking University)**  
12:00 - 12:30 Electrical Control on Correlated States in Layered Quantum Materials  
**Hongtao Yuan (Nanjing University)**  
12:30 - 14:00 Lunch

#### Afternoon session 3

*Chaired by Ning Wang (Hong Kong University of Science and Technology)*

14:00 - 14:30 Quantum metric length in flat band materials  
**Kam Tuen Law (Hong Kong University of Science and Technology)**  
14:30 - 15:00 TBD  
**Cui-Zu Chang (The Pennsylvania State University)**  
15:00 - 15:30 Strong Inter-valley Electron-Phonon Coupling in Magic-Angle Twisted Bilayer Graphene  
**Yulin Chen (University of Oxford / ShanghaiTech University)**  
15:30 - 16:00 Break

#### Afternoon session 4

*Chaired by Zhong Wan (University of California, Los Angeles)*

16:00 - 16:30 2D Materials for Physical Computing  
**Feng Miao (Nanjing University)**  
16:30 - 17:00 Quantum confinement of Dirac fermions  
**Lin He (Beijing Normal University)**  
17:00 - 17:30 Fractional Chern Insulator – from quantum many-body computation perspective  
**Zi Yang Meng (The University of Hong Kong)**

**Day 2 (December 17, Tuesday)****Morning session 5***Chaired by Daniel S.P. Lau (The Hong Kong Polytechnic University)*

- 09:30 - 10:00 Interlayer coupling in graphene-based moiré heterostructures  
**Dongkeun Ki (The University of Hong Kong)**
- 10:00 - 10:30 Van der Waals Material Devices for Logic, Memory and Computing  
**Han Wang (The University of Hong Kong)**
- 10:30 - 11:00 Break

**Morning session 6***Chaired by Junwei Liu (Hong Kong University of Science and Technology)*

- 11:00 - 11:30 Towards dissipationless topotronics  
**Xincheng Xie (Peking University / Fudan University)**
- 11:30 - 12:00 TBD  
**Di Xiao (University of Washington)**
- 12:00 - 12:30 Helicity & Chirality in Quantum Materials  
**Zhenyu Zhang (University of Science and Technology of China)**
- 12:30 - 14:00 Lunch

**Afternoon session 7***Chaired by Chen Hu (Chinese University of Hong Kong)*

- 14:00 - 14:30 Exciton insulators in two-dimensional systems  
**Kai Chang (Zhejiang University)**
- 14:30 - 15:00 Molecular orbitals in solids and their role in physical properties  
**Hongming Weng (Institute of Physics, Chinese Academy of Sciences)**
- 15:00 - 15:30 TBD  
**Ting Cao (University of Washington)**
- 15:30 - 16:00 Break

**Afternoon session 8***Chaired by Dangyuen Lei (City University of Hong Kong)*

- 16:00 - 16:30 New progresses in topological superconductors by proximity effect  
**Jinfeng Jia (Shanghai Jiaotong University / Southern University of Science and Technology)**
- 16:30 - 17:00 New perspectives on Rydberg excitons in 2D semiconductors  
**Yang Xu (Institute of Physics, Chinese Academy of Sciences)**
- 17:00 - 17:30 Kagome monolayers: theoretical prediction and experimental realization  
**Wei Ji (Renmin University of China)**
- 18:00 – 20:00 **Dinner for invited participants**

### Day 3 (December 18, Wednesday)

#### Morning session 9

*Chaired by Zi Yang Meng (The University of Hong Kong)*

- 09:30 - 10:00 Self-doped molecular Mott insulator in bilayer Hubbard model at electron filling  $\frac{1}{4}$  and application to high  $T_c$  superconducting  $\text{La}_3\text{Ni}_2\text{O}_7$   
**Fuchun Zhang (Kavli Institute for Theoretical Sciences)**
- 10:00 - 10:30 Nonlinear transport theory at the order of quantum metric  
**Haizhou Lu (Southern University of Science and Technology)**
- 10:30 - 11:00 Break

#### Morning session 10

*Chaired by Sen Yang (Hong Kong University of Science and Technology)*

- 11:00 - 11:30 Magnetic polymorphism in 2D layered antiferromagnets  
**Shiwei Wu (Fudan University)**
- 11:30 - 12:00 Magnetic exciton in van der Waals antiferromagnet  
**Je-Geun Park (Seoul National University)**
- 12:00 - 12:30 Unique Exchange Bias Phenomena in the  $\text{MnBi}_2\text{Te}_4$  Family  
**Yu Ye (Peking University)**
- 12:30 - 14:00 Lunch

#### Afternoon session 11

*Chaired by Dongkeun Ki (The University of Hong Kong)*

- 14:00 - 14:30 Physics of moiré multilayers  
**Mikito Koshino (Osaka University)**
- 14:30 - 15:00 Tunable incommensurability, complete structural phase diagrams and peculiar electronic structures in trilayer moiré-of-moiré systems  
**Young-Woo Son (Korea Institute for Advanced Study)**
- 15:00 - 15:30 Correlated topological transport in ABC-stacked multilayer graphene  
**Guorui Chen (Shanghai Jiaotong University)**
- 15:30 - 16:00 Break

#### Afternoon session 12

*Chaired by Xiaodong Cui (The University of Hong Kong)*

- 16:00 - 16:30 Optical crystals of 2D materials  
**Kaihui Liu (Peking University)**
- 16:30 - 17:00 Tunable Chirality Couplings and Anomalous Photo-Nernst Effect in Magnetic Weyl Cones in  $\text{Co}_3\text{Sn}_2\text{S}_2$   
**Dong Sun (Peking University)**
- 17:00 - 17:30 Tailoring polaritons via gradient moiré superlattices with space-variant switchable light-matter interactions  
**Zhiqiang Li (Sichuan University)**
- 17:30 - 17:50 Closing Speech, by Dong-Keun Ki (Conference co-chair)

**Day 4 (December 19, Thursday)**

internal activities for invited guests