

*January 9, 2023 – Speaker: Yao Wang*

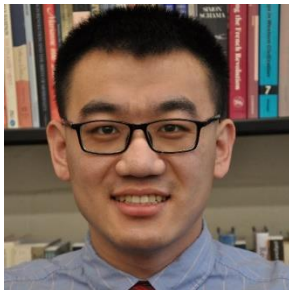
**Time: 3:30-4:30 PM**

**Location: Marcus Nanotechnology 1116-1118**

**Title:** Phonon Meets Correlation in Strongly Correlated Superconductors

**Abstract:** Correlated materials comprise a large part of the innovative landscape due to rich applications and unconventional phases. In this talk, I will employ the recent progress in cuprates as an example to illustrate the closed-loop design and discovery of quantum materials. By comparing experiments and simulations, we identified a prominent spectral feature beyond the predictions of the Hubbard model. Then, with our recently developed hybrid algorithms, we quantitatively explained it through the coexistence of strong correlations and electron-phonon coupling. The interplay between these two interactions provides a possible reason for unconventional superconductivity. Finally, I will employ the mechanism learned from simulations and discuss two attempts to design better superconductors through in-plane strains and ultrafast lasers.

**Bio:** Yao Wang is an assistant professor at the Department of Physics and Astronomy of Clemson University. He received his bachelor's degree from University of Science and Technology of China in 2011 and his Ph.D. degree from Stanford University in 2017. After that, he worked at Harvard University as an MPHQ postdoctoral fellow, before joining Clemson in 2020. His research interests lie in the theoretical and computational studies of quantum many-body problems and their experimental correspondence in solid-state materials and quantum simulators. He is the recipient of the DOE early career award and AFOSR young investigator award of 2023.



The poster is dark blue with yellow and white text. It features the GT logo and 'School of Physics' at the top. The title 'PHONON MEETS CORRELATION IN STRONGLY CORRELATED SUPERCONDUCTORS' is in large yellow letters. Below it, the date 'MONDAY, JANUARY 9, 2023', time '3:30 TO 4:30 PM', and location 'MARCUS NANOTECHNOLOGY 1116-1118' are listed in white. A yellow button says 'COFFEE AND PASTRIES SERVED'. A circular inset photo of Dr. Yao Wang is on the right, with a yellow bar below it reading 'DR. YAO WANG, CLEMSON UNIVERSITY'. A decorative grid of dots is in the top right and bottom left corners.

GT Georgia Institute of Technology  
School of Physics

**SCHOOL OF PHYSICS COLLOQUIUM**

**PHONON MEETS CORRELATION IN STRONGLY CORRELATED SUPERCONDUCTORS**

MONDAY, JANUARY 9, 2023  
3:30 TO 4:30 PM  
MARCUS NANOTECHNOLOGY 1116-1118

COFFEE AND PASTRIES SERVED

DR. YAO WANG  
CLEMSON UNIVERSITY