

# COMPUTATIONAL PHYSICS

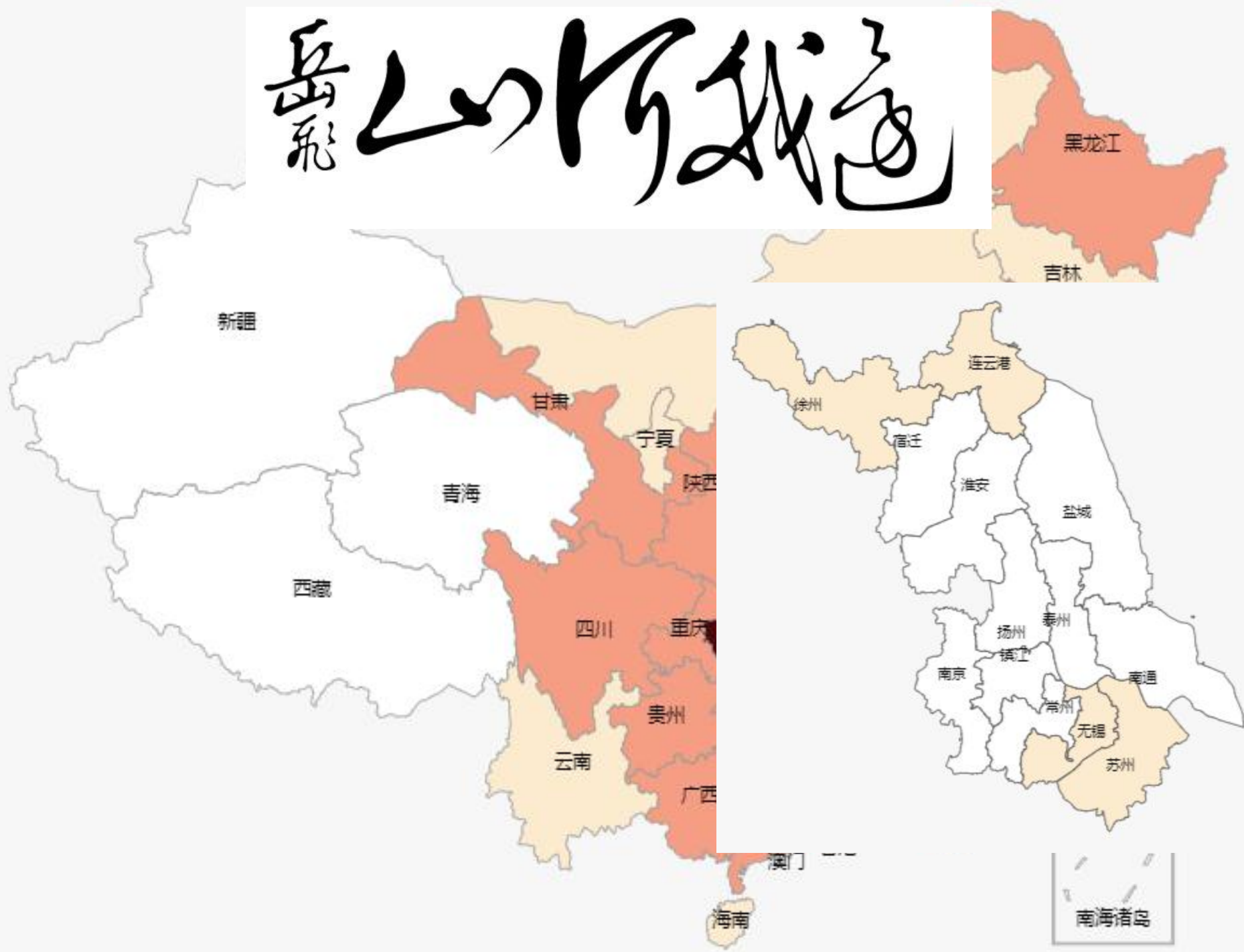


Shuai Dong

School of Physics  
Southeast University

reface

# 岳山河我道



# About this course

- ❖ A **bilingual** course, degraded from **full English** preparation. The official language is English/Chinese.
- ❖ 3 credits: 40 lectures (taught by me) + 16 computational laboratory hours (taught by teaching assistant) in this semester.
- ❖ Class: Class 1-2, Tuesday & Class 3-4, Friday  
Lab: TBD

# The first guy who ate crabs



Ate **King Crab** in Shangri-la@Singapore, 2013

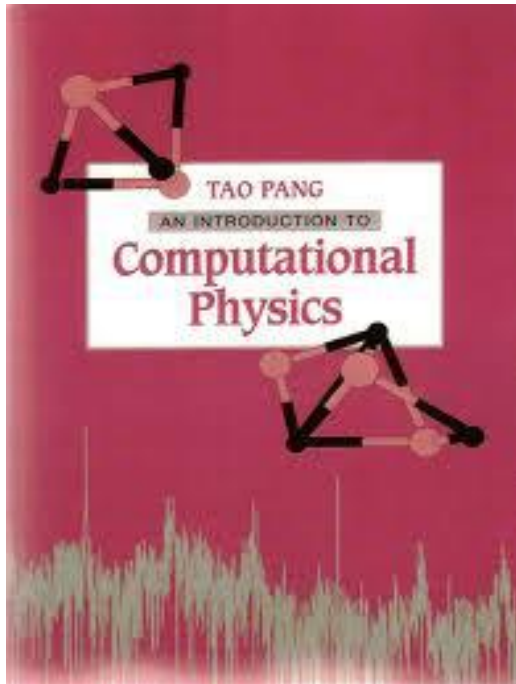


# About this course

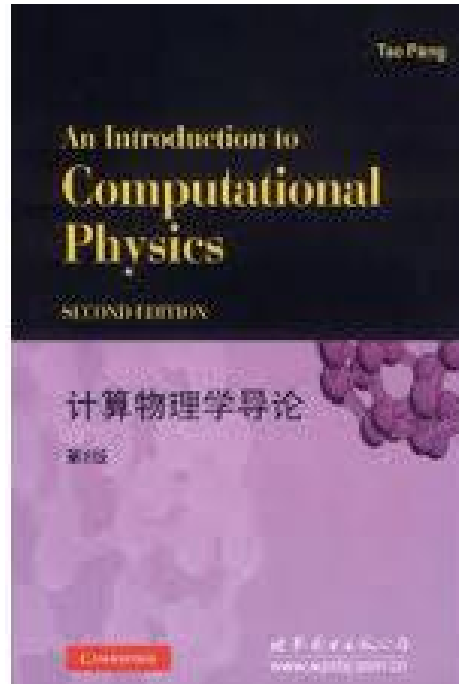
- ❖ Attend the class (10%)
- ❖ Attend the laboratory (10%)
  
- ❖ Midterm (40%)  
a project of any topic of computational physics  
code, results, and a report/paper  
submit to me in the end
  
- ❖ Final (40%): an open-book exam

# About this course

## ❖ Reference book:



1st edition



2nd edition

Author: Tao Pang  
庞涛

University of Nevada,  
Las Vegas

Cambridge  
University Press

An Introduction to Computational Physics

# Some suggestions

- ❖ Prepare before class
- ❖ Write codes by yourself
- ❖ Think, write & test
- ❖ Just do it!



Learn by yourself!



# Personal contact

- ❖ Office: N215, Tianjiabing Building
- ❖ Appointment in advance is preferred!
- ❖ Walk-in may be also available sometime!
- ❖ Phone (O): 52090601-8215
- ❖ Email: [sdong@seu.edu.cn](mailto:sdong@seu.edu.cn) (preferred)
- ❖ <https://physics.seu.edu.cn/sdong>

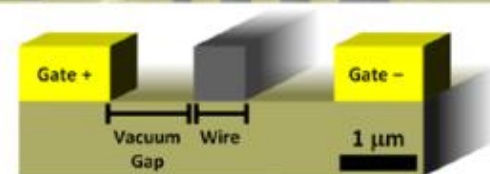
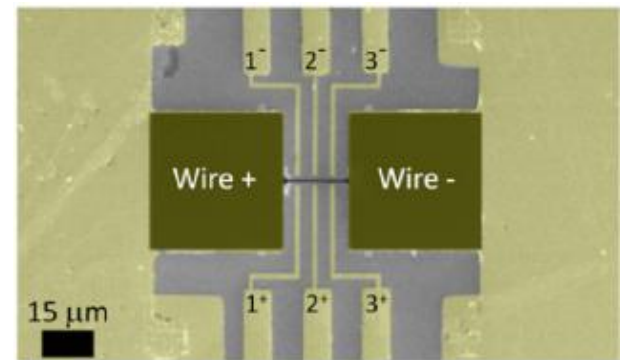
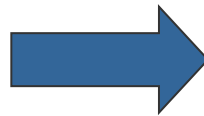
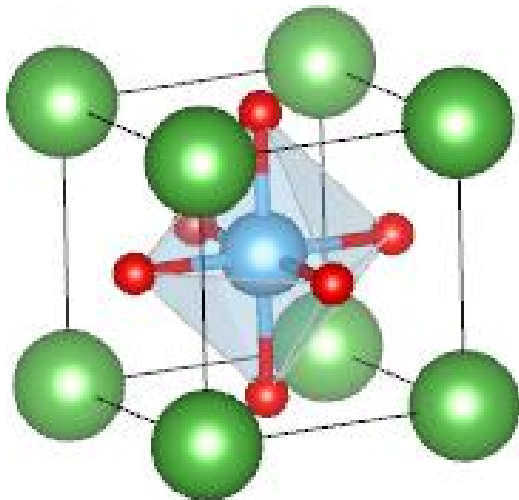
# About me

- ❖ Shuai Dong (董帅)  
Junior Chief Professor of SEU  
Changjiang Junior Scholar of MOE  
Associate Chair of School of Physics
- ❖ B.S. 2004 /PhD from NJU, 2009
- ❖ Professor of SEU since 2009
- ❖ Studied & worked in Univ. Tennessee & Oak Ridge National Lab., USA, for 3 years.
- ❖ Short-term visit in RIKEN, JP/Univ. Nebraska, USA/Nanyang Technological Univ. Singapore/Univ. Stuttgart, Germany/CNR, Italy

# About my research

Research interests:

- ❖ -Physics
- ❖ --Condensed matter physics
- ❖ --- **Correlated electronic materials**
- ❖ from **physics** to **devices**



# Ruler of civilization



Stone age



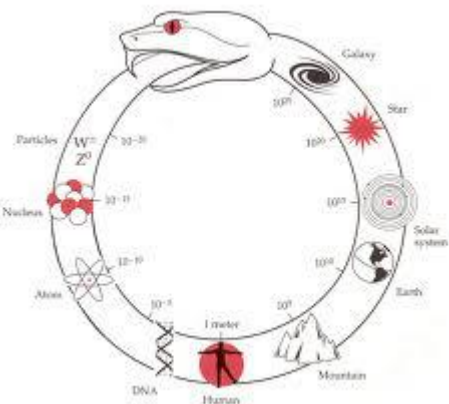
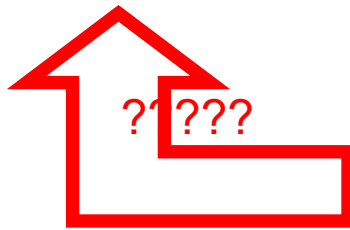
bronze age



iron age



Semiconductor age



# Rule of life



Gene

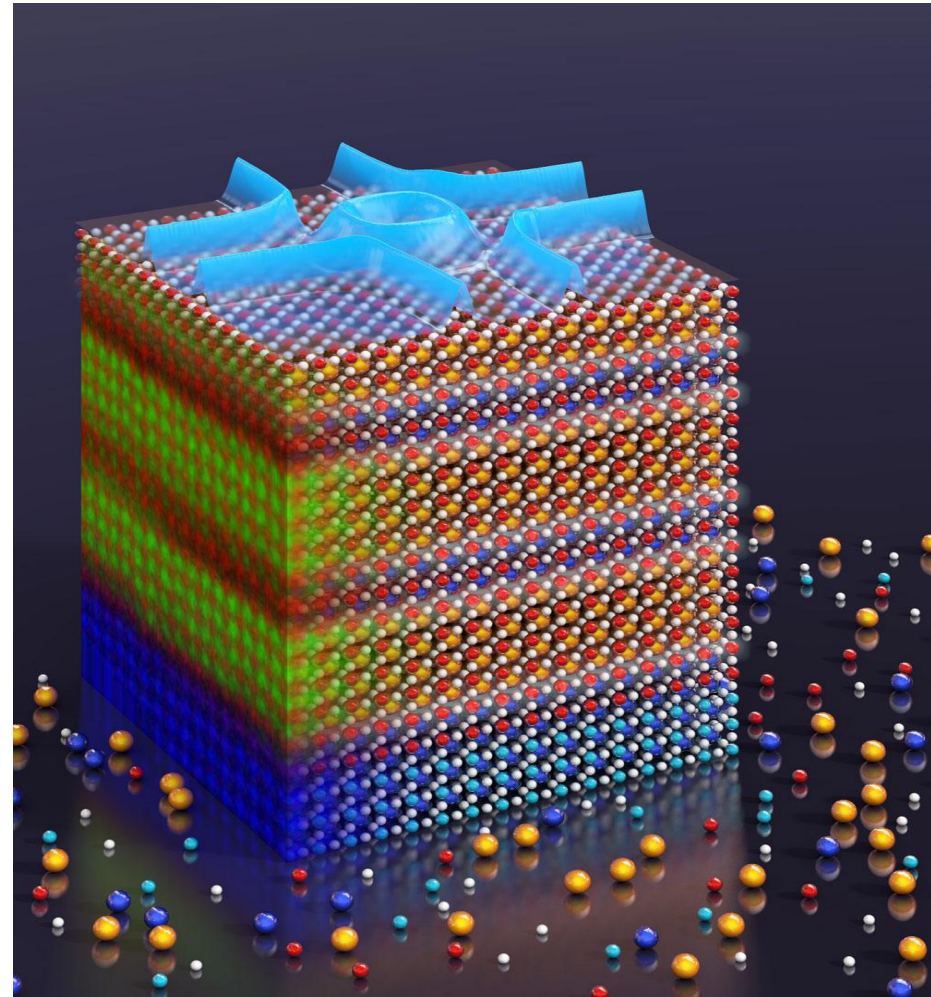
Code of gene: A-T-C-G-U



human genome project  
since 1990

# Rule of matters

Lattice-Charge-Spin-Orbital



Materials Genome Initiative  
since 2011

# Our aims

- ❖ Use our **bright brains & powerful computers** to
  - 1) discover the **physical rules** in condensed matters and materials
  - 2) **search** and **design** new materials and devices based on **physical knowledge**.



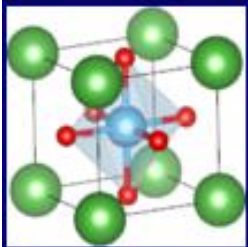
# To potential students

## Requirements:

- ✓ highly self-motivated!
- ✓ wish to pursuit higher degree(s) under my supervision
- ✓ Intelligent & hard working

## Benefit

- ❖ Cutting-edge research
- ❖ Plenty financial support
- ❖ Promising oppotunity to exchange abroad in world-leading insitutes/groups



## *Correlated Electronic Materials Physics*

# 关联电子材料物理 研究组

⑩ Group page:

<http://physics.seu.edu.cn/sdong>

- ❖ Welcome to join in our team!
- ❖ I'm looking for the next star!