Beijiang LIU

2011-present, IHEP, Associate professor

- 2008-2011, HKU/CUHK, postdoc fellow
- 2003-2008, IHEP, PhD

🔶 1999-2003, Tongji U, BS

Research Interests: experimental particle physics

- Hadron spectroscopy, Amplitude analysis
- Tracking software

## **BESIII** Experiment











the charged charmoniumlike structure at BESIII



- Hadron spectroscopy is an unique way to investigate QCD
- testing QCD in the confinement regime
- providing insights into the fundamental degrees of freedom





## Partial wave analysis

## Tasks:

 $\square$  Map out the resonances

- Systematic determination of resonance properties: spin-parity, resonance parameters, production properties, decay properties, ...
- resonances tend to be broad and plentiful, leading to intricate interference patterns, or buried under a background in the same and in other waves.

Event-wise efficiency correction

 $P(\xi) = \frac{\omega(\xi)\epsilon(\xi)}{\int \omega(\xi)\epsilon(\xi)}$ 

PWA: a key tool of hadron spectroscopy

- $\checkmark$  Decompose to partial wave amplitudes
- ✓ Make full use of data
- $\checkmark$  Handle the interference
- Extract resonance properties with high sensitivity and accuracy



**GPUPWA** 

## Partial wave analysis of $J/\psi \rightarrow \gamma \eta \eta$ Phys.Rev.D87, (2013) 092009

