

# Closing remarks

## International Workshop on Partial Wave Analyses and Advanced Tools for Hadron Spectroscopy

### PWA 10/ATHOS 5

Beijing, China, July 16-20, 2018

<http://pwaathos2018.ihep.ac.cn>

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#### Local Organizing Committee (IHEP, CAS)

Ying Chen

Liaoyuan Dong

Shuangshi Fang

Xiaobin Ji

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# The Conference Site and the National Museum



Museum with the third largest number of yearly visitors





# The Conference Site and the National Museum



## Founding of BEPC





# The Participants

International Workshop  
on Partial Wave Analyses and Advanced Tools for Hadron Spectroscopy  
(PWA 10/ATHOS 5)

July 16-20, IHEP, Beijing,  
China







# Personal Comments:

Joint ATHOS-PWA workshop

Status after several such workshops:

still different language in baryon and meson PWA

- Baryons:

- PWA Models (Pietarinen fits, SAID/MAID/Bn-Gatchina etc...) fit all observables at all beam energies from „all“ experiments
- Many talks given by theorists showing their fits with data
- Very good cooperation theory/experiment (common data base)
- **Talk characteristics:** each presenter shows about > 500 distributions (felt)

**Record held by Sarantsev: 1010 graphs (I counted !!)**

**Recommendation:** Point out the issues, not the wealth of data

Difficult to see the physics behind different models and  
the essence of the model differences

- Heavy baryons:

- PWA for heavy baryons started. Methods derived from meson physics - which other tools are necessary ?
- So far: little theory input



# Personal Comments:

- Mesons:

- Experiments: PWA analysis much improved (coupled channel fits (sufficient ?), K-matrix pole extraction, isobar freed analysis)
- Heavy mesons: still isobar model used too often, further development of tools necessary
- Theory: effort to formulate 2- and 3-body amplitudes
- Gap between theory and experiment closes from both sides
  - still: which information can be transferred from reaction  $\rightarrow$  reaction ?
- Need data base for independent theory fits (partly requires cooperation agreements with collaborations) - PHASE initiative (stalled)
- Strategy: need coherent strategy for mutual understanding

Recommendation: updated whitebook

include theorists in model fitting

# Personal Comments:

## Joint ATHOS-PWA workshops

- issues learned
  - model selection algorithms (LASSO or else) for **baryon** and **light mesons** (initiator)
  - analysis methods for **heavy** and **light mesons** now experience mutual fertilisation
  - develop cooperation models for theory - experiment (learn from baryon sector)
- **Goals** for analysis are multifold
  - **spectroscopy** - mesons, baryons
  - **presentations** of results and „lessons learned“ **still very different**
  - electroweak studies, CKM (mesons)
  - CP violation - mesons, baryons (just starting)

## Conclusion:

Lets continue joint workshops but also adapt communication



# PWA10/ATHOS5

IHEP, Beijing, China  
July 16-20, 2018

37 academic talks, more than 66 participants

## Session Chairs:

Xiaoyan Shen, Beijiang Liu, Liming Zhang, Stephan Paul, Bingsong Zou, Shan Jin, Andrey Sarantsev, Boris Grube, Hanqing Zheng, Qiang Zhao, Liaoyuan Dong, Zhenwei Yang, Andrzej Kupsc, Deborah Rönchen, Changzheng Yuan, Shuangshi Fang

## LOC members:

Ying Chen, Liaoyuan Dong, Shuangshi Fang, Xiaobin Ji, Beijiang Liu, Hailong Ma, Xiaoyan Shen, Kai Zhu

## Conference secretaries:

Yeliu Mo, Zeqi Wei, Shuopin Wen

## Volunteers:

Ning Cao, Wangling Chang, Yuming Ma, Xinxin Ma, Yuqiang Wang, Xian Xiong, Shuangli Yang, Qiao Zhou



**Next workshop in 2019**

**Rio de Janeiro, Brazil**

