Pei-Laun Tai

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Email: pt10f@my.fsu.edu Nationality: Taiwan website: http://peiluan-tai.com

Education:

■ 2010- 2016 May (expected) Ph.D. in Physics
Florida State University Florida, USA
GPA: 3.97 / 4.00 (ΦΚΦ member)

■ 2001-2006 Bachelor of Science in Physics (with Economics minor)
National Tsing Hua University Hsinchu, Taiwan
GPA: 3.78 / 4.00

Personal Profile:

Currently, I am a Ph.D. student in the FSU nuclear experimental group. My graduate study focuses on nuclear structure study through γ-ray spectroscopy. I am also eager to learn another technique of investigating nuclear structure. Meanwhile, I have much hands-on experience with setting up γ-ray type experiments and also love developing software programs. I aspire to a successful researcher.

Highlighted Skills:

- γ-ray spectroscopy experiment setup
- γ-ray angular distribution analysis
- DSAM analysis
- DCO ratio analysis
- C++, Python, ROOT and more
- Tutorial making

Language •Mandarin (mother tongue) •English (excellent) •Japanese (basic conversation)

Dissertation:

■ **"γ-ray Spectroscopy of ^{31}Si by ^{18}O(^{18}O, αnγ) Reaction"**

Advisor: Prof. Samuel Tabor

Major contributions:

-- Developed software program for event-by-event Doppler correction with kinematic reconstruction.

-- Performed data analysis from GAMMASPHERE in conjunction with the Microball detector.

-- Performed data analysis from GRETINA in conjunction with the Phoswich Wall detector.

-- Performed DSAM analysis, γ –ray angular distribution,

-- Performed nuclear shell model calculations.

Lab & Detector Experience:

Graduate Research Assistant (2010-2016)

■ **At The John D. Fox Superconducting Linear Accelerator Laboratory (FSU)**

Major contributions:

-- Set up FSU γ-ray detector array and Si E-ΔE particle telescope for several experiments.

-- Set up digital data acquisition system and developed an automatic energy calibration code.

-- Maintain Tandem and Linac accelerator.

■ **At Argonne Laboratory**

Major contributions:

-- Performed PID and merged the raw data from the first GRETINA experiment in conjunction with the Phoswich detector aimed to study the nuclear structure of ^{33}P, ^{34}P , and ^{31}Si.

■ **At NSCL**

Major contributions:

-- Set up SeGA array and planar Ge DSSD detectors for a β-decay experiment for ^{55}Cu.

Publications:

"A γ-ray Spectroscopy Study for Higher Spin Structure in ^{31}Si"

P.-L. Tai *et al.* (in preparation)

"Radiative Decay of Neutron-Unbound Intruder States in ^{19}O"

R.Dungan, S.L. Tabor, Vandana Tripathi, A.Volya, K.Kravvaris, B.Abromeit, D.D.Caussyn, S.Morrow, J.J. Parker IV, **P.-L.Tai**, and J.VonMoss (PhysRevC.93.021302)

"Higher spin structures in ^{21}F and ^{25}Na"

J. M. VonMoss, R. Dungan, M.P. Kuchera, , S. L. Tabor, Vandana Tripathi, A. Volya, B. Abromeit, P.C. Bender, D.D. Caussyn, R. Lubna, S. Miller, J.J. Parker IV, and **P.-L. Tai**. (PhysRevC.92. 034301)

"Split Isobaric Analog State in ^{55}Ni: Case of Strong Isospin Mixing"

Vandana Tripathi, S. L. Tabor, A. Volya, S. N. Liddick, P. C. Bender, N. Larson, C. Prokop, S Suchyta, **P.-L. Tai**, and J. M. VonMoss (Phys. Rev. Lett. 111, 262501)

"High efficiency beta-decay spectroscopy using a planar germanium double-sided strip detector"

N. Larson, S.N. Liddick, M. Bennett, A. Bowe, A. Chemey, C. Prokop, A. Simon, A. Spyrou, S. Suchyta, S.J. Quinn, S.L. Tabor, **P.-L. Tai**, V.Tripathi, J.M. Vonmoss (Nuclear Instruments and Methods in Physics Research Section A: Volume 727, 2013, Pages 59-64)

Programing Skills:

■ programming Language:

• *Highly proficient:* C++, Python, BASH script.

• *Moderate:* HTML / CSS

• *Basic*: Fortran 77/95/2003, XML

■ Software Package:

• *Highly proficient:* Xmgrace, Gnuscope (data visualization tool to project γ-ray gates)

• *Moderate:* CERN ROOT, Mathematica, Latex, TKinter (Python GUI package)

• *Basic:* NumPy, gnuplot

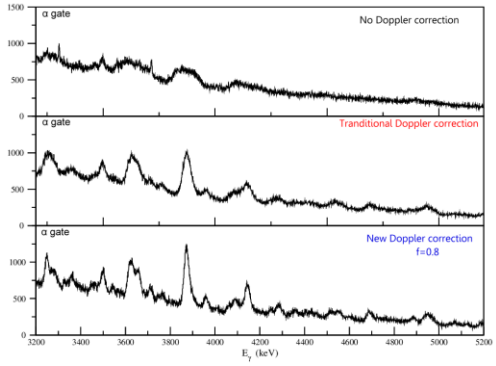
■ Physics code:

CoSMo (Continuum Shell Model code develop by Dr. Alexander Volya)

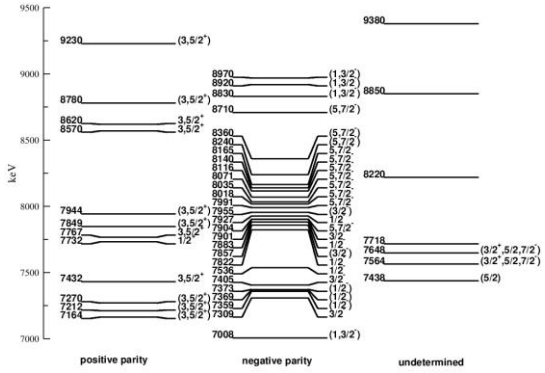
Fresco (Basic)

Selected Developed Programs:

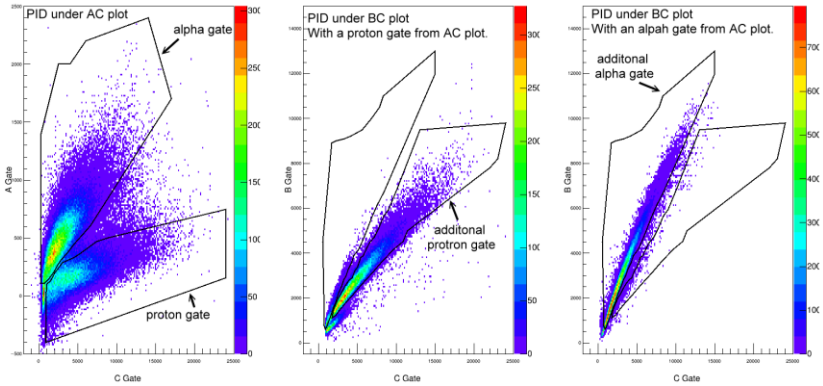
- kinematic correction package: perform event-by-event Doppler correction with recoil reconstruction, which significantly improved the Doppler correction. (written in C++)



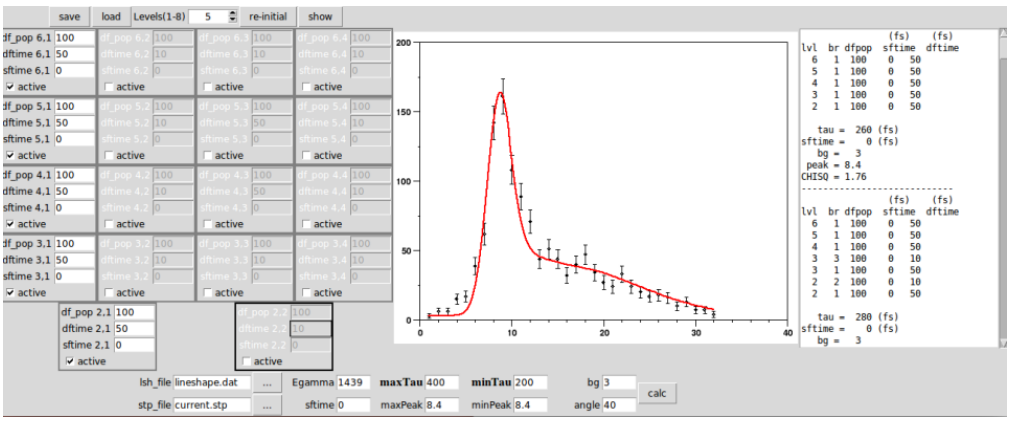
- Level factory code: a power utility to plot a level scheme especially when the level density is high. The output files can be directly edited by Xmgrace program. (written in Python)



- PID: developed a double-particle gate to further separate α particles and protons for the GRETINA experiment in conjunction with the Phoswich detector. The particle-γ timing gate was also included. (Written by CERN ROOT package)



- DSAM_Package: A GUI program for preparing stopping power information, getting line shapes, and visualizing feeding patterns and fitting results. (written in Python, C++, Fortran)



Teaching:

■ Teaching Assistant in the Department of Physics at FSU

- Lab instructor for College Physics A (PHY2053C) — 2011, spring semester
- Grader for College Physics A (PHY2053C) — 2011 fall and 2015 spring semester
- Grader for Nuclear Physics II (PHZ5307) — 2014 spring semester

■ Online video tutorials (selected)

- CERN ROOT tutorial for beginners (15 clips on YouTube: goo.gl/ybtwZT)
- Xmgrace tutorial (7 clips on YouTube)

Talks & Poster:

■ Contribution Talk

"γ-ray Spectroscopy of ^{31}Si", presented at APS meeting, Apr. 2012, Atlanta, GA.

"γ-ray Spectroscopy of ^{31}Si", presented at SESAPS meeting, Nov. 2012, Tallahassee, FL.

"γ-ray Spectroscopy of ^{31}Si", presented at DNP meeting, Oct. 2013, Newport Beach, VA.

■ Poster

"γ-ray Spectroscopy of ^{31}Si", presented at 2013 exotic beam summer school, Lawrence Berkeley National Laboratory, Berkeley, California.

References:

■ Name: Samuel Tabor
- Affiliation: FSU
- Position: Professor
- Email: tabor@nucmar.physics.fsu.edu

■ Name: Vandana Tripathi
- Affiliation: FSU
- Position: Scientist
- Email: tripathi.vandana@gmail.com

■ Name: Alexander Volya
- Affiliation: FSU
- Position: Associate Professor
- Email: avolya@fsu.edu