PWA 2011

Sixth International Workshop on Pion-Nucleon Partial-Wave Analysis and the Interpretation of Baryon Resonances

23–27 May, 2011 — Washington, DC, U.S.A.

Conference Secretary:

Emily Neagle

Local Organizers:

William J. Briscoe
Helmut Haberzettl
Mark Paris
Igor Strakovsky (Chair)
Ron Workman

International Advisors:

Mauro Giannini, Genoa
Michael Pennington, JLab
Winston Roberts, FSU
Alfred Švarc, Ruđjer Bošković
Lothar Tiator, Mainz

Workshop Program and Miscellaneous Information

CNS
Center for Nuclear Studies
Data Analysis Center

Sponsors:

National Science Foundation • Jefferson Lab
GWU CCAS Dean's Office • GWU Department of Physics • GWU Center for Nuclear Studies

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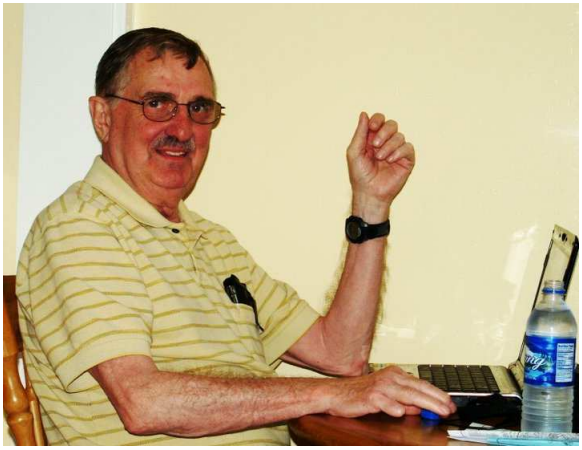


This workshop is dedicated to the memory of our friend and colleague,
Richard A. Arndt (1933–2010)

Program

All talks take place in **Lecture Hall 108** in **Funger Hall**, on G Street, NW, between 22nd and 23rd Streets, NW (see campus map). All talks are scheduled for 25 minutes, plus 5 minutes for discussion. Speakers are requested to provide screen-formatted pdf or ppt files of their talks well before the sessions in which their talks are scheduled. Individual laptop hook-ups cannot be accommodated. Talk files will be linked online at `http://gwdac.phys.gwu.edu/pwa2011/program.htm`, unless expressly requested otherwise. — Participants may also use rooms 220, 221, or 222 of the same building for meetings, discussions, etc.

Sunday, 22 May 2011

6:00–9:00 pm — Meet and Greet at Bertucci's
Informal get-together in the upstairs bar of *Bertucci's Pizzeria* at 2000 Pennsylvania Avenue (see campus map). (NB: Food and drinks available, but *not* provided by workshop.)

Monday, 23 May 2011

8:00	**Registration**	At registration desk outside the lecture hall (desk will close at noon)
Session Chair: W. J. Briscoe		
8:45	A.K. Opper	Welcome
9:00	H. Haberzettl	Reciprocal consistency constraints among photoprocesses
9:30	M. Döring	Combined analysis of pion-induced reactions in a dynamical coupled-channels approach
10:00	S. Nakamura	Dynamical coupled-channels analysis of meson-production reactions at EBAC
10:30	**Coffee Break**	****
11:00	K. Nakayama	How well can we establish baryon resonances?
11:30	A. Gasparyan	Spin observables in photon- and pion-nucleon interactions
12:00	**Lunch Break**	****
Session Chair: M. Manley		
1:30	S. Krewald	Recent developments in the Jülich model
2:00	F. Huang	Pion photoproduction in a dynamical coupled-channels model
2:30	V. Shklyar	Giessen coupled-channels model for pion- and photon-induced reactions
3:00	**Coffee Break**	****
3:30	R. Edwards	Excited-state meson and baryon spectroscopy from Lattice QCD
4:00 –5:00	**Discussion Session**	*Conveners: H. Haberzettl and K. Nakayama* Effective Lagrangian approaches (outline p. 4)

Tuesday, 24 May 2011

8:45	**Registration**	At registration desk outside the lecture hall (desk will close at 11:00 am)
Session Chair: U. Mosel		
9:00	L. Tiator	Model-independent partial-wave analysis for pion photoproduction
9:30	A. Švarc	Poles as a link between QCD and scattering theory (old and contemporary knowledge)
10:00	M. Manley	New multichannel partial-wave analysis including ηN and $K\Lambda$ channels
10:30	**Coffee Break**	****
11:00	M. Paris	Unified multichannel unitary amplitudes for hadro- and photoproduction
11:30	A. Hosaka	Dynamically generated *vs* elementary components of hadron resonances
12:00	**Lunch Break**	****
Session Chair: W. Roberts		
1:30	M. Pennington	Barrelet zeros and ambiguities in PWA
2:00	B. Zou	Amplitude analysis of $\gamma N \to K\pi\Lambda$ and $Kp \to \pi\Lambda$
2:30	Y. Azimov	Search for narrow resonances in PWA
3:00	**Coffee Break**	****
3:30	S. Ceci	The extraction of resonance properties
4:00	A. Sarantsev	Status of the Bonn-Gatchina partial-wave analysis
4:30	**Discussion**	*Conveners: L. Tiator and R. Workman*
–5:30	**Session**	Model dependencies in extracted resonance parameters (outline p. 4)

Wednesday, 25 May 2011

Session Chair: E. Klempt		
9:00	E. Pasyuk	Meson photoproduction with CLAS
9:30	M. Sumihama	N^* study at Japanese facilities
10:00	M. Ostrick	Spin observables in π and η photoproduction with the Crystal Ball at MAMI
10:30	**Coffee Break**	****
11:00	J. Hartmann	Double-polarization measurements with the Crystal Barrel/TAPS experiment at ELSA
11:30	M. Sadler	Satisfying the need for hadronic data in the resonance region
12:00	**Lunch Break**	****

— Afternoon free for working groups or sightseeing —

Thursday, 26 May 2011

Session Chair: A. Švarc

9:00	A. Szczepaniak	Final-state interactions in charmonium two- and three-meson production
9:30	E. Epelbaum	Chiral perturbation theory with explicit spin-3/2 degrees of freedom
10:00	E. Klempt	Baryon spectroscopy: What do we learn, what do we need?
10:30	**Coffee Break**	****
11:00	K. Semenov	Bootstrap constraints for the πN resonance spectrum
11:30	B. Golli	Meson electroproduction in the region of the Roper and the $N(1535)$ resonance in chiral quark models
12:00	**Lunch Break**	****

Session Chair: S. Krewald

1:30	V. Mokeev	N^* electrocouplings and $N\pi\pi$ hadronic decay widths from phenomenological analysis of the CLAS $\pi^+\pi^- p$ electroproduction data
2:00	I. Strakovsky	SAID facility and database development
2:30	D. Roper	Dick Arndt's contribution to pion-nucleon scattering analyses
3:00	**Coffee Break**	****
3:30	C. Wohl	The Particle Data Group: A brief history and how it works
4:00 –5:00	**Discussion Session**	*Convener: M. Pennington* The future of hadron databases (outline p. 4)

6:00–9:30 pm — Banquet at the *Key Bridge Marriott Hotel*, in the *Capital View Foyer II*
The cash bar will be open at 6 pm; dinner will start at 7 pm. (See instructions on page 6 for how to get to the Marriot Hotel.)

Friday, 27 May 2011

Session Chair: A. Hosaka

9:30	J. Goity	Applications of the $1/N_c$ expansion to baryons
10:00	J. Gegelia	Resonances in chiral effective field theory
10:30	**Coffee Break**	****
11:00	M. Giannini	The helicity amplitudes in the hypercentral Constituent Quark Model
11:30	W. J. Briscoe	Recap – What is needed from an experimentalist's point of view

— End of Workshop —

Outlines of Discussion Sessions

The following paragraphs outline the respective points of departure for the discussion sessions. The listed issues are not necessarily complete and they are not intended to strictly limit the discussion topics. Participants are encouraged to raise related issues that may not be mentioned herein. To visually support their arguments, participants in the discussions may provide up to two slides as pdf files (formatted for screen projection) beforehand to the conveners of the respective sessions. (The two-slide limit is to be strictly enforced, and participants will be actively discouraged from abusing this opportunity to start a five-minute mini-talk.)

Session 1: Effective Lagrangian approaches [Monday, 16:00–17:00]

The use of effective Lagrangians to describe hadronic or electromagnetic degrees of freedom must be confronted by constraints required by quantum field theory. Among these are Lorentz invariance of the S matrix, discrete symmetries (PCT), crossing symmetry, global symmetries (exact and approximate), unitarity, and electromagnetic gauge invariance (Ward-Takahashi identities). The application of the effective Lagrangian approach inevitably incurs the truncation, approximate implementation, or neglect of some subset of the constraints. What are the consequences of these truncations, approximations, or unsatisfied constraints. Is it possible to quantify the systematic errors in calculated observables and extracted resonance parameters associated with these limitations? How are resonance parameters extracted in effective Lagrangian techniques related to quantities calculated in lattice QCD?

Session 2: Model dependencies in extracted resonance parameters [Tuesday, 16:30–17:30]

Hadronic resonance parameters are extracted from both effective Lagrangian approaches and parametrizations (SAID, MAID, BoGa, etc.) of amplitudes. Modeling is an inevitable aspect of both the extraction and description of experimental data. On the experimental side, modeling is required owing to limitations in observed experimental knowledge in terms of, for example, kinematics, reaction channels, and polarization observables. What are the main constraints on the theoretical side that make some degree of modeling necessary? What methods and approaches offer the least model-dependent statements about extracted hadronic resonance parameters? What experimental data are most important for constraining models and parametrizations?

Session 3: The future of hadron databases [Thursday, 16:00–17:00]

The *Review of Particle Properties* (RPP) of the *Particle Data Group* (PDG) is the repository that is currently widely identified as an authority on the collection and status of hadronic resonance parameters. What are the future possibilities and opportunities for the hadron community with respect to the RPP? As the focus of the PDG is centered on high-energy physics, are there opportunities to reinvigorate its medium-energy hadronic component? Is there a need for a dedicated repository of hadronic resonance data? What relation to the RPP would (or should) such a repository possess?

Miscellaneous Information

Residence Hall Housing

All participants who have reserved a dormitory room will stay in **Potomac House** located at **2021 F Street, NW, Washington, DC 20052**, within easy walking distance of the workshop venue (see campus map). Detailed information about Potomac House can be found at this website: `http://living.gwu.edu/halls/secondyear/PotomacHouse/`. Additional useful information is to be found at the following websites:

- Summer Pre-Arrival E-Guide at `http://summerhousing.gwu.edu/prearrival/eguide/`;
- Check-in Procedures at `http://summerhousing.gwu.edu/prearrival/checkin/` (*);
- Check-out Procedures at `http://summerhousing.gwu.edu/prearrival/checkout/`.

These web addresses are also linked at the workshop website.

(*) Regarding **check-in**, please note that on the day of your arrival **check-in before 3 pm is not possible**. However, we have made arrangements for late check-ins and individual check-ins, so you can disregard the corresponding limitations mentioned in the check-in guide above. You will need an ID for check-in. **Check-in location is in the Marvin Center, 1st floor, information desk near the 21st Street side entrance.** (See attached map. Enter, go up a short flight of stairs and locate the information desk along the right-hand side wall.)

Important: Please note that if you are staying in dormitory housing, the University requires that you **provide the name and phone number of an emergency contact**. If you have not provided this information either via your registration form or to Emily directly, please email it to `eneagle@hh.phys.gwu.edu` as soon as possible.

Campus-wide Wireless Internet Access

Participants will be given access to the campus-wide wireless university network during the entire time of the workshop. Detailed instructions will be available at the Meet and Greet on Sunday night and at the on-site registration desk. If you do not bring a laptop with wireless capability and need internet access, please contact one of the local organizers during the workshop.

On-site Financial Matters

After your arrival, if you still need to pay the workshop fee or for your housing, please see the conference secretary, **Ms. Emily Neagle**, as soon as possible. Her office is located in **Corcoran Hall, Rm 105**, in the Physics Department (see campus map), within easy walking distance of Funger Hall.

If we have agreed to reimburse you for expenses, you also need to see Emily as soon as possible after your arrival to take care of the necessary paperwork. Please note that if you are a non-resident foreign national, federal regulations do not permit us to pay reimbursements if you are not in possession of an appropriate **business-type entry visa**. A tourist visa is not enough. Please

make sure that upon entering the United States, you declare the purpose of your visit as "business" to obtain the correct visa stamp for your passport from the CBP Officer at the port of entry.

Meet and Greet at *Bertucci's* on Sunday Night, May 22, 6-9 pm

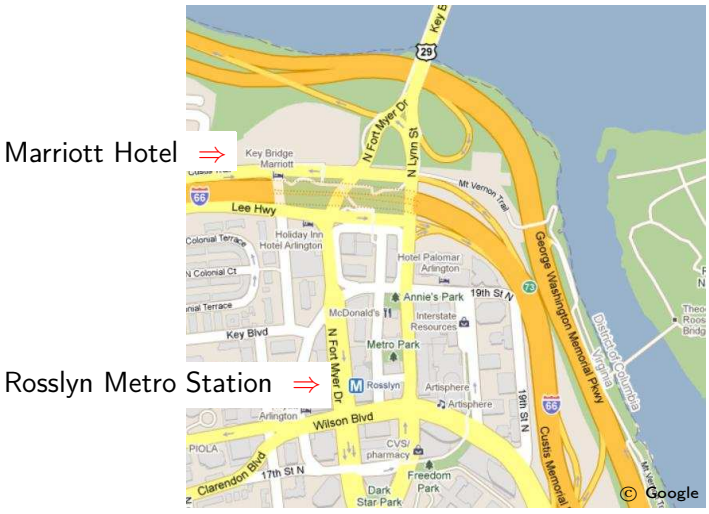
There will be an informal get-together in the upstairs (i.e., street-level) bar of ***Bertucci's Pizzeria*** at **2000 Pennsylvania Avenue**. Bertucci's is right on campus, within easy walking distance of Potomac House (see campus map). (Please note that the food and drinks you order will not be provided by the workshop, otherwise we would not be able to keep the workshop fee as low as it is.)

There will be *no* on-site registration possible on Sunday night, but you may get access information for the campus-wide GW wireless network should you be desperate to get online that very night.

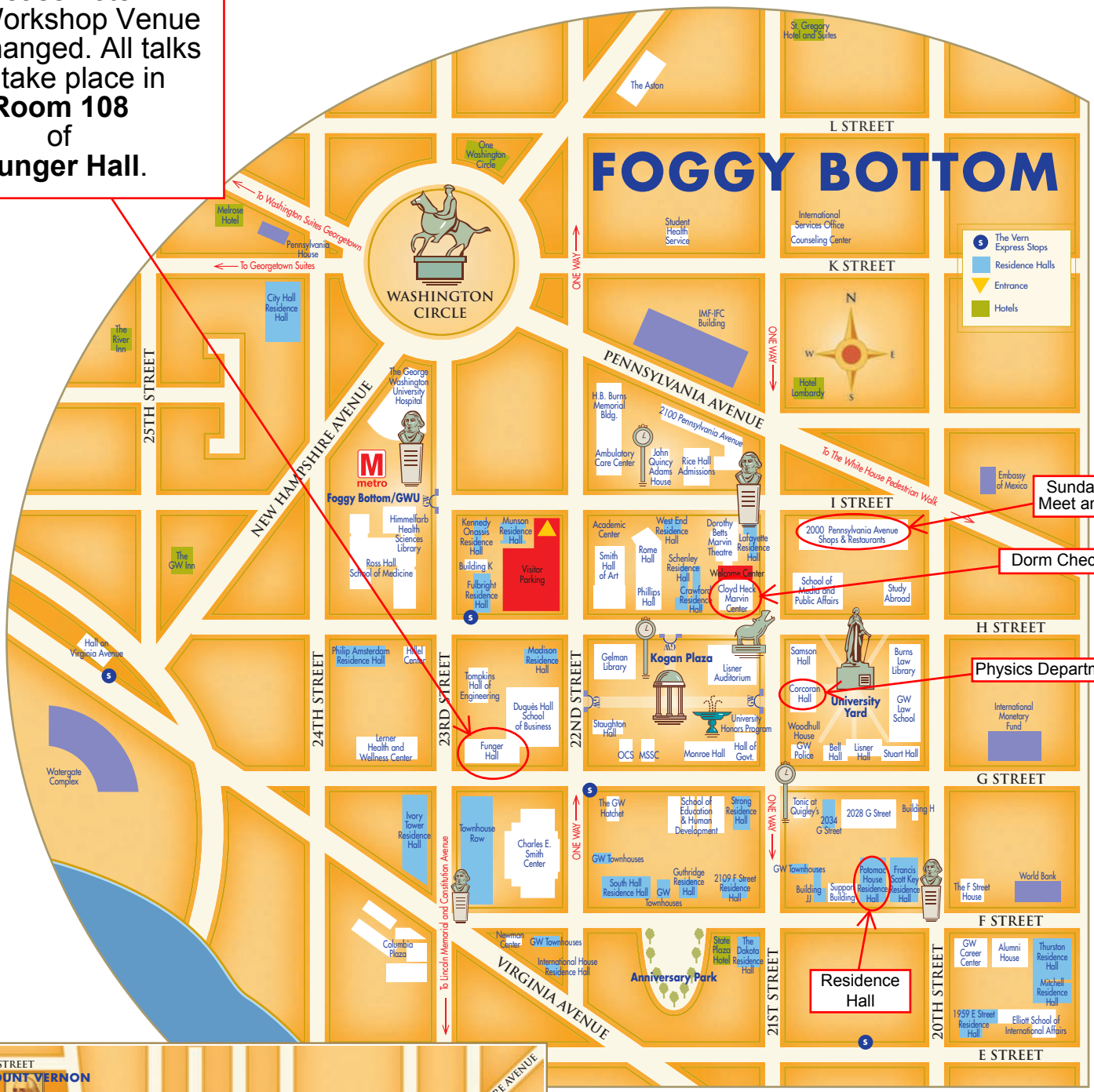
Banquet at the *Key Bridge Marriott Hotel* on Thursday Night, May 26, 6-9:30 pm

The dinner will take place in the *Capital View Foyer II* of the hotel. The cash bar will be open at 6 pm; dinner will start at 7 pm. (Please note: You need to make a choice among the available dishes at the time of your registration on Monday morning. Please let us know then if you have special dietary needs.)

The hotel is located at **1401 Lee Highway**, in **Arlington, VA 22201** (see map below; a Google map is also linked on the workshop website). The easiest way to get to the hotel is to take the Metro from the **Foggy Bottom–GWU Station** across the corner of 23rd and I Streets, NW; its location is marked on the Campus Map attached here. You can take both the **Orange Line (towards Vienna)** or the **Blue Line (towards Franconia)** to **Rosslyn Station**. This is just a one-station three-minute ride to the other side of the Potomac River. You exit the station on **N. Fort Myer Drive** and **walk north** directly towards the hotel **for about 0.2 mi** (see map below). If you arrive at the Foggy Bottom-GWU Station at 5:30 pm, **trains leave at 5:36 pm (Orange), 5:40 pm (Blue), and 5:42 pm (Orange**), and you should have no problem being at the hotel by around 6 pm. Allow a few more minutes to purchase your fare card if you are unfamiliar with the Metro fare-card system. The cash fare for this trip is $2.40; for your return trip, the fare is $1.85. You can purchase a fare card from the vending machines at the station entrance for the entire round-trip by putting $4.25 on your fare card at the start. Each fare gets deducted automatically from the fare card when you put the card through the card reader as you leave each station. Please note that this is rush-hour time, and the stations and trains are likely to be very crowded.



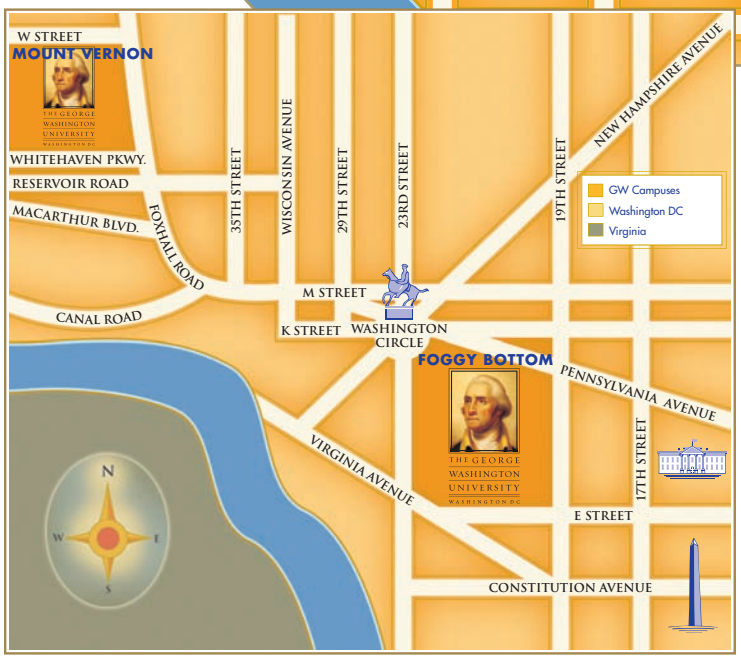
Please note:
The Workshop Venue has changed. All talks will take place in
Room 108
of
Funger Hall.



Sunday Night Meet and Greet

Dorm Check-in

Physics Department



The following locations are indicated on the map by arrows.

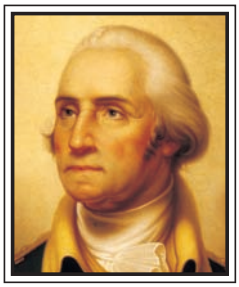
Dorm Check-in:
Marvin Center, 800 21st Street

Residence Hall:
Potomac House, 2021 F Street

Sunday night Meet and Greet:
Bertucci's, 2000 Pennsylvania Avenue

Workshop Venue:
Funger Hall, 2201 G Street

Physics Department:
Corcoran Hall, 725 21st Street



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