Summary of BRAG Meeting
March 5-6, 2001, Mainz, Germany

Steve Dytman, with input from Ron Workman

Abstract

These minutes are complete except for the Charter discussion. The Charter was amended with changes to the election procedures and the conditions for working groups.

About 25 people participated in a 1.5-day meeting. I was happy with the quality of progress evident and am hopeful this is the start of really good things. I am also more convinced than ever of the importance of our work. The idea of model dependence and objective understanding were important themes of the workshop. As you may know from Volker's e-mail, the new steering committee is Simon Capstick, Steve Dytman, Lothar Tiator, and Ron Workman. The committee met and chose Dytman as chair and Capstick as secretary.

I feel the main strength of BRAG is in the work done by the working groups and will continue to push those aspects. If that goes well, the world will notice. The first day was spent in working group meetings and plenary working group reports. I think that went very well as a model and will use that in the future. Some complained that they are interested in more than one group. If there is significant overlap in issues, we will have joint sessions.

The database group discussed the proposed new features of SAID. The GWU group put in an ITR proposal for a significant upgrade and Igor Strakovsky presented the features Monday afternoon. The major features are an updated structure (*e.g.,* Oracle) and enhanced access and visualization. They picture public, preliminary, and private access to give people in the field the best paths to understanding the data. The major missing element in SAID is the lack of three-body final states. Igor will continue to be the contact person for this group. Various people will need to develop an appropriate BRAG database; this is a group that needs active participation of more people.

The partial-wave analysis group sponsored a study of pion photoproduction data to get some idea of the model dependence in multipole analyses over the low- and medium-energy regions. Igor and Lothar Tiator put together two benchmark datasets, one up to 450 MeV the other to 1200 MeV. Anyone was welcome to fit the data and seven results from GW, RPI, Mainz, Yerevan, Kharkov, and Taiwan/Dubna were assembled. Results were compared on the basis of data fits, predictions of observables, and the output multipoles. In the low-energy region, consistent results for the $E2/M1$ ratio were found, with a standard deviation of 0.27% for the seven results. Discrepancies were noted in some multipoles; in one case, these were identified as being due to missing ingredients in particular models. In other cases, for example the P_{11} multipole, similar results for the full multipole were built up from different model ingredients, and this could have implications for those involved in resonance extraction. Ron Workman and Lothar Tiator are co-chairing this group and intend to edit a group summary of this study. The next task planned is a more realistic test involving a larger dataset with the inclusion of systematic errors.

The resonance interpretation group spent most of its time discussing recent model dependence studies. Cornelius Bennhold collected most recent (often unpublished) results for baryon properties from the KSU (Manley and collaborators), GWU/Giessen (Bennhold and collaborators), and Pitt/ANL (Dytman, Lee, and collaborators). The agreement among results from the three models is surprisingly consistent. He noticed an interesting pattern, the lowest state in each partial wave tends to be strongly excited and well-understood. (The S_{11} partial wave is a notable exception, see below. The lowest states in P_{31} and F_{35} partial waves are 1* or 2*.) Helmut Haberzettl made the interesting suggestion that this is the consequence of analyticity. Steve Dytman showed results for a different kind of model dependence, focusing on different ways to analyze the S_{11} partial wave. Results were shown for two and three S_{11} resonances, for full CMB model and K-matrix model, and for inclusion of different channels. A minimum of πN, ηN, and γN channels was required to describe the physics of this partial wave adequately. For the data included, there was no strong evidence of a third S_{11}. The photocoupling amplitude for $S_{11}(1535)$ showed significant model dependence. Simon Capstick reported on plans for a model dependence study of CQM models. Harry Lee has offered to calculate observables for any quark model that has form factors available. There has been significant interest in the project, but minimal progress to date. Cornelius Bennhold was chosen as the new contact person for this group.

Tuesday, plenary discussions of various general issues were discussed. Latifa Elouadrhiri led a discussion of the costs and benefits of release of data before publication. She noted that the CLAS collaboration has agreements restricting release of data. All agreed that BRAG would benefit greatly from access to data once it was close to final. A committee of Latifa, Lothar, Cornelius, and Bill Briscoe agreed to make a recommendation to BRAG and the various experimental collaborations.

Ron Workman asked if there were any other database efforts other than SAID and there were no responses at that time. The GWU group proposes that BRAG use the SAID database and they welcome contributions from others. No objections were voiced. However, the need to include final states of two mesons and a baryon must be included in order to go after important issues like “missing CQM states”. There are two methods for analysis of these kinds of data, well summarized by Marco Ripani. One method corrects for acceptance explicitly and gives results in cross sections that are directly usable by theorists. The other method extracts physics directly from the events and derives acceptance in that process. Some effort is required for these analyses to present their results in ways others can use them. Partial-wave T matrices appear to be the best way to do this.

Steve Dytman led a discussion of the ways for BRAG to put its preferred results on the web. (This is independent of the database issues above.) All apparently agreed to the idea of the resonance interpretation group developing a set of resonance data with reasonable criteria for inclusion and appropriate error bars. There results would have to be approved by BRAG before they could be represented as such. SAID already has the partial-wave amplitudes of many groups, so people felt there was no issue there.