Preface

Resonances remain an important tool to study the structure and dynamics of hadrons and an efficient catalyst for our traditional Mini-Workshops at Bled. The many ideas, questions and responses presented at our meeting should not fade away and we thank the participants for submitting their contributions to the Proceedings as a permanent reminder of our common interests and discussions.

An important aspect of the talks was the bridge between the phenomenological phase shift analyses and the theoretical interpretation of resonances. Attempts were shown to relate experimental data to pole parameters in a model-independent way, introducing additional constraints to obtain a unique solution. This year, the emphasis was on meson photoproduction, in particular of η and η', as well as doubly-polarized pion electroproduction. Of interest was also pion photoproduction on bound neutrons and the forward neutron asymmetry in proton-nucleus collisions.

The Roper resonance is still a challenge. It is not clear to which extent it is predominantly a three-quark system or a dynamically generated resonance. The dynamics of other baryons also requires an extension beyond the valence quark configurations. The knowledge of the baryon form-factors has improved both due to new experimental analyses as well due to new theoretical perspectives, especially regarding transition form-factors.

It was interesting to learn about the cluster separability in relativistic few body problems, about phase rotation ambiguities, and about the progress in understanding strength functions in hadronic and nuclear dynamics.

The third emphasis was on new resonances in the charm sector. The meson and baryon resonances discovered at the Belle detector at KEKB are still being analysed in order to determine their quantum numbers and their double-$q\bar{q}$ or "molecular" dimeson structure. In view of the forthcoming Belle2 upgrade it is time to analyse the prospects of identifying the double charm baryons and the DD^* dimesons (tetraquarks).

We were very happy to host such enthusiastic participants. We do hope to meet you at Bled again soon and that you will enjoy reading these Proceedings and refresh your memories of the subjects of our common interest. Perhaps you might wish to offer these Proceedings to your colleagues as a temptation to join us at Bled in the near future.

Ljubljana, November 2017 B. Golli, M. Rosina, S. Širca

The full color version of the Proceedings are available at
`http://www-f1.ijs.si/BledPub`, and the presentations can be found at
`http://www-f1.ijs.si/Bled2017/Program.html`.

Predgovor

Resonance so še vedno pomembno orodje za študij zgradbe in dinamike hadronov, pa tudi učinkovit katalizator za naše tradicionalne Blejske delavnice. Mnoge zamisli, vprašanja in odzivi, ki smo jih predstavili na našem srečanju, ne smejo oveneti, zato se zahvaljujemo udeležencem, da so poslali svoje prispevke kot trajen spomin na naša skupna zanimanja in razprave.

Pomemben vidik predavanj je bil most med fenomenološko analizo faznih premikov in teoretičnim tolmačenjen resonanc. Predstavljeni so bili poskusi, kako povezati eksperimentalne podatke s parametri polov na modelsko neodvisen način, s tem da se vpeljejo dodatni pogoji, ki vodijo do enolične rešitve. Letos je bil poudarek na fotoprodukciji mezonov, zlasti η in η', pa tudi na elektroprodukciji dvojno polariziranih pionov. Zanimiva je bila tudi fotoprodukcija pionov na vezanih nevtronih ter asimetrija nevtronov, ki letijo naprej pri trkih protonov na jedrih.

Roperjeva resonanca predstavlja še vedno izziv. Ni še jasno, do katere mere je pretežno sistem treh kvarkov ali dinamično povzročena resonanca. Dinamika mnogih drugih barionov tudi zahteva razširitev modelov na konfiguracije, ki presegajo zgolj valenčne kvarke. Poznavanje barionskih oblikovnih faktorjev se je izpopolnilo zaradi novih eksperimentalnih analiz kakor tudi zaradi novih teoretičnih pogledov, zlasti v zvezi z oblikovnimi faktorji za prehode.

Zanimiv je bil vpogled v ločljivost gruč pri relativističnem problemu malo teles, v mnogoličnost rotacije faz, pa tudi napredek pri razumevanju jakostnih funkcij v hadronski in jedrski dinamiki.

Tretji poudarek je bil na novih resonancah v čarobnem sektorju. Mezonske in barionske resonance, ki so jih odkrili na detektorju Belle na pospeševalniku KEKB, še vedno analizirajo, da bi določili njihova kvantna števila in njihovo "molekularno" dimezonsko zgradbo v zvezi z dvojnimi pari $q\bar{q}$. V perspektivi skorajšnjega povečanja detektorja Belle2 je čas, da prevetrimo možnosti identifikacije dvojno čarobnih barionov ter dimezonov (tetrakvarkov) DD^*.

Čutimo se srečne, da smo se družili s tako navdušenimi udeleženci. Upamo, da vas bomo spet kmalu videli na Bledu in da boste uživali branje tega Zbornika in osvežili spomine na probleme našega skupnega zanimanja. Morda boste ponudili ta Zbornik svojim kolegom kot vabo, da se nam v bližnji prihodnosti pridružijo na Bledu.

Ljubljana, november 2017 B. Golli, M. Rosina, S. Širca

Barvno verzijo lahko dobite na `http://www-f1.ijs.si/BledPub` in prosojnice predavanj na `http://www-f1.ijs.si/Bled2017/Program.html`.