The 2013 National Nuclear Physics Summer School – Final Report

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I. OVERVIEW, LECTURERS, AND LECTURE FORMAT

The National Nuclear Physics Summer School (NNPSS) 2013 took place at Stony Brook University from July 15-26, 2013. The student body was made up of 52 external participants and 22 local participants. The faculty consisted of 12 lecturers, who discussed nuclear physics broadly, and 6 seminar speakers who addressed more specialized topics. Each lecturer was given three one and a quarter hour time periods, while each seminar speaker was given one hour in total. The day was punctuated with coffee breaks and a two hour lunch period. Each day a group of students went with the lecturers to the student cafeteria to have lunch. A discussion section was held at the end of each day, during which the students could ask additional questions. For overview, the school schedule is given in Fig. 1.

The lecturers, their institutions, and their topics of study were:

1. Barbara Badelek (University of Warsaw & Uppsala U.): Experimental Hadron Structure.
2. Silas Beane (University of Bonn): Lattice QCD and Effective Field Theory.
3. Edward Brown (Michigan State University): Nuclear Astrophysics.
4. Richard Casten (Yale University): Experimental Nuclear Structure.
5. Brian Cole (Columbia University): Heavy Ion Experiments.
6. John Cowan (University of Oklahoma): Observational Astrophysics.
7. Sangyong Jeon (McGill University): Heavy Ion Theory.
8. David Kawall (University of Massachusetts, Amherst): Fundamental Symmetries.
9. Daniela Leitner (Michigan State University): Accelerator Physics.
10. Kate Scholberg (Duke University): Neutrinos.
11. Marco Stratmann (Brookhaven National Laboratory): Peturbative QCD.

12. James Vary (Iowa State University): Nuclear Structure Theory.

The more specialized seminars consisted of:

1. Alexei Bazavov (BNL): Lattice QCD at non-zero temperature.
2. Dave Brown (BNL): Nuclear data.
3. Yuri Kovchegov (Ohio State): Gluon saturation and small-x.
4. Curtis Meyer (Carnegie Mellon): Advances in hadron spectroscopy.
5. Mark Sakitt (BNL): Nuclear proliferation.
6. John Thomas (NCSU): Cold atoms.

II. SOCIAL ASPECTS OF THE SCHOOL

- The 52 external students were housed in the Stony Brook dormitory and provided a meal plan. (Local students did not receive the meal plan or housing support.) By having students living and eating in the same place, the school created an intellectually stimulating environment, which hopefully served to build professional friendships and future collaborations. The dorms are new and have internet access; we received no complaints.

- There were two planned social events which were sponsored by the school. (The social were events paid for with funds external to the NSF grant [redacted].) During the first week there was an excursion to Brookhaven National Laboratory, followed by a barbecue at Smith Point Beach on July 18th. The excursion was very successful. The students were given a tour of the STAR and PHENIX detectors. In addition there was an extensive tour of the RHIC tunnel and the magnet division. The beach was also a welcome break, and featured a band on a wonderful summer evening. In the second week of the school, there was a banquet which was held on July 24th. The banquet was also very successful.

- The weekends were left free. We feel that this was right choice. Some advice was given how to go to New York City and what to do around Long Island in the summer (without a car). Many students did take the opportunity to visit New York City. Coincidentally, the Stony Brook Film Festival was held from 7/19 – 7/21, and some of the students went to the featured movies, which were shown in the Staller Center adjacent to the conference site.

Schedule for National Nuclear Physics Summer School 2013

Dates: July 15-26, 2013

Time	Monday	Tuesday	Wednesday	Thursday	Friday
1st week					
	7/15/2013	7/16/2013	7/17/2013	7/18/2013	7/19/2013
8.15-9.00	Registration + Continental Breakfast				
9.00-10.15	pQCD, M. Stratmann	pQCD, M. Stratmann	Exp. nuclear structure, R. Casten	Exp. nuclear structure, R. Casten	Nuclear Astrophysics, E. Brown
10.15-10.45	break	break	break	break	break
10.45-12.00	pQCD, M. Stratmann	LQCD/EFT, S. Beane	Exp. hadron structure, B. Badelek	Nuclear Astrophysics, E.Brown	Exp. hadron structure, B. Badelek
12.00-14.00	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
14.00-15.15	LQCD/EFT, S. Beane	LQCD/EFT, S. Beane	Exp. nuclear structure, R. Casten	1.15pm Leave for BNL	Nuclear Astrophysics, E. Brown
15.15-15.45	break	break	break	Excursion to BNL	break
15.45-17.00	Accelerator physics, D. Leitner	Fund. symmetries, D. Kawall	Fund. symmetries, D. Kawall	and BBQ at Smith Point Beach	Exp. hadron structure, B. Badelek
17.10-18.10	Discussions: Stratmann	Discussions: Bean/Kawall	Discussions: Casten		Discussions: Badelek
Organizers on duty	Teaney,Venugopalan	Venugopalan, Teaney	Venugopalan, Kiryluk	Sickles	Zingale, Sickles
2nd week					
	7/22/2013	7/23/2013	7/24/2013	7/25/2013	7/26/2013
9.00-10.15	Heavy ion theory, S. Jeon	Heavy ion theory, S. Jeon	Heavy ion theory, S. Jeon	Nuclear structure theory, J. Vary	Nuclear Structure theory, J. Vary
10.15-10.45	break	break	break	break	break
10.45-12.00	Observational astrophys. J. Cowan	Observational astrophys. J.Cowan	Neutrinos, K. Scholberg	Neutrinos, K. Scholberg	Neutrinos, K. Scholberg
12.00-14.00	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
14.00-15.15	Heavy ion experiments, B. Cole	Heavy ion experiments, B. Cole	Nuclear structure theory, J. Vary	small x, saturationY. Kovchegov	Nuclear proliferation, M. Sakitt
15.15-15.45	break	break	break	break	
15.45-17.00	LQCD at T>0, A. Bazavov	Hadron spectrum, C. Meyer	Heavy ion experiments, B. Cole	cold atoms, J. Thomas	Nuclear Data, D. Brown
17:10-18:10	Discussions: Bazavov	Discussions: Cowan	Discussions: Scholberg	Discussions: Kovchegov/Thomas	Discussions: Vary
			Banquet at 18:30		
Organizers on duty	Zingale,Venugopalan	Zingale/Sorensen	Kiryluk/Sorensen	Kiryluk	Kiryluk

FIG. 1. Schedule for the National Nuclear Physics Summer School 2013

III. THE STUDENT BODY

In this section we will record some statistics about the makeup of the student body.

- The student body consisted of 52 external students, and 22 local students. The locals came from BNL and Stony Brook in equal parts, and were all accepted. The local students did not receive the meal plan or housing support, and contributed only insignificantly to the total costs of the school. The local students were able to attend the banquet and the excursion.

- The school was oversubscribed. We ultimately had to reject approximately 3 or 4 very qualified external students. We also rejected about 20 students who were not serious candidates. We budgeted for 50 students and accepted 52. Preference was given to female candidates, experimental candidates, and candidates working in sub-fields of nuclear physics unrelated to heavy-ion collisions. The close proximity of the school to RHIC led to many more applicants in this sub-field of nuclear physics. A list of the students (both external and local) is given in Appendix A.

- The make-up of the external students consisted of 41 males and 11 females.

- Of the external students, 39 came from US institutions and 13 came from foreign institutions.

- The local students consisted of 21 males and 1 female. 16 of the 22 local students came from US institutions, while the remaining 6 local students (who were staying at BNL) came from foreign institutions. About half of the local students attended the preponderance of the lectures, and participated in the excursion and banquet.

Appendix A: List of Students

In this section we will give a list of external students that attended the school. This is given in Table IV. We also had a large number of local students attend the school due to the proximity to BNL, and the large groups in nuclear physics at Stony Brook. Table V lists the local students who attended the school. These local students were welcome to attend all aspects of the school – the excursion, the banquet, and the coffee breaks. About half of local students attended the excursion and the banquet. However, local students were not given housing or a meal plan. The local students from foreign institutions listed in Table V were staying at BNL, and their lodging was not supported by the school.

Name	Institution	Gender
Belarge, Joseph	Florida State University	Male

Continued ...

Name	Institution	Gender
Besse, Adrien	LPT Orsay	Male
Caldeira Balkestahl, Li	Uppsala University	Female
Campbell, John	The Ohio State University	Male
Chang, Zilong	Texas A&M	Male
Cogswell, Bernadette	Vanderbilt University	Female
Czajka, Alina	Jan Kochanowski University	Female
Das, Sabita	Brookhaven National Laboratory, USA (Institute of physics, India)	Female
Deja, Katarzyna	National Centre for Nuclear Research	Female
Garcia, Hugo	Instituto de Ciencias Nucleares UNAM (Nuclear Sciences Institute)	Male
Guo, Dehua	George Washington University	Male
Heijkenskjold, Lena	Uppsala University	Female
Hemphill, Dustin	Purdue University	Male
Hong, Ran	University of Washington	Male
Jung, Kurt	Purdue University	Male
Kusno, Adithia	College of William and Mary	Male
Lekaveckas, Mindaugas	MIT	Male
Li, Yang	Iowa State University	Male
Ling, Bo	University of Illinois at Chicago	Male
Lingle, Mark	Florida State University	Male
Liou, Tseh	Columbia University	Male
Liu, Jia	The Ohio State University	Male
Loggins, Vera	Wayne State University	Female
Mallavarapu, S Kumar	Washington University in St.Louis	Male
Marko, Gergely	Eotvos Lorand University	Male
Mati, Peter	Budapest University of Technology and Economics	Male
Mohamed Nuhman, Hashir Rashad	Old Dominion	Male
Narayan, Amrendra	Mississippi State University	Male
Ojha, Vikash Kumar	IIT BOMBAY	Male
Paquet, Jean-Francois	McGill University	Male
Pitonyak, Daniel	Temple University	Male
Planells Noguera, Xumeu	University of Barcelona	Male
Plumberg, Christopher	The Ohio State University	Male
Retinskaya, Ekaterina	IPhT CEA Saclay	Female
Salzwedel, Jai	Ohio State University	Male

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Name	Institution	Gender
Scheikh Obeid, Abdulrahman	Institut fur Kernphysik	Male
Seng, Chien Yeah	University of Wisconsin-Madison	Male
Silwal, Rupesh	MIT	Male
Somanathan, Sidharth	Texas A&M University	Male
Stahl, Christian	Institute for nuclear physics, Technical University of Darmstadt, Germany	Male
Steinpreis, Matthew	The Ohio State University	Male
Trzeciak, Barbara	Warsaw University of Technology	Female
Tucker, Ross	Arizona State University	Male
Velicanu, Dragos	MIT	Male
Vujanovic, Gojko	McGill University	Male
Wang, Xinyang	Arizona State University	Male
Warren, MacKenzie	University of Notre Dame	Female
Wiecki, Paul	Iowa State University	Male
Wu, Dajing	Iowa State University	Male
Xu, Lingshan	Purdue University	Female
Yan, Xuefei	Duke University	Male
Zhang, Yawei	Rutgers University	Male

TABLE IV: Table of external students supported by the school with a meal plan and housing support.

Name	Institution	Gender
Bok, Jeongsu	New Mexico State University	Male
Constantinou, Constantinos	Stony Brook University	Male
Di Ruzza, Benedetto	Brookhaven National Laboratory	Male
Do, Jaehyeon	Yonsei universisy	Male
Feege, Nils	Stony Brook University	Male
Gervais, Hualong	Stony Brook University	Male
Hirono, Yuji	The University of Tokyo	Male
Hongo, Masaru	The University of Tokyo	Male
Huo, Peng	Stony Brook University	Male
Kim, Hyeonjoong	Yonsei University	Male
Lim, Sanghoon	Yonsei University	Male
Liu, Peifeng	Stony Brook University	Male
Mazeliauskas, Aleksas	Stony Brook University	Male
Prakash, Abhishodh	Stony Brook University	Male

Continued ...

Name	Institution	Gender
Rowan, Zachary	CUNY Graduate Center	Male
Schaefer, Brennan	Vanderbilt University	Male
Shanmuganathan, Prashanth	Kent State University, Ohio	Male
Subramanya Prabhakar, Naveen	Stony Brook University	Male
Tribedy, Prithwish	Variable Energy Cyclotron Centre, Kolkata, India	Male
Wang, Hui	Brookhaven National Lab	Male
Yalcin, Serpil	Stony Brook University	Female
Zhang, Hong	Stony Brook University	Male

TABLE V: Table of local students who attended the school.