PROCEEDINGS OF SCIENCE

Report on the DIS2015 International Workshop

Fredrick I. Olness*
Department of Physics, Southern Methodist University, Dallas, Texas USA 75275-0175
E-mail: olness@smu.edu

Robert Kehoe*
Department of Physics, Southern Methodist University, Dallas, Texas USA 75275-0175
E-mail: kehoe@smu.edu

Pavel Nadolsky*
Department of Physics, Southern Methodist University, Dallas, Texas USA 75275-0175
E-mail: nadolsky@smu.edu

We provide a brief report on the XXIII International Workshop on Deep Inelastic Scattering and Related Subjects (DIS2015), and also acknowledge sponsors and committee members.

The XXIII International Workshop on Deep Inelastic Scattering and Related Subjects
April 27 - May 1, 2015
Southern Methodist University
Dallas, Texas 75275

*Editors, DIS2015 Proceedings.

PoS(DIS2015)018

Figure 1: DIS2015 was hosted in Dallas, Texas on the SMU campus.

Dallas, Texas Welcomes the DIS2015 International Workshop

This spring the "XXIII International Workshop on Deep-Inelastic Scattering and Related Subjects" (DIS2015) took place at Southern Methodist University (SMU) in Dallas, Texas. The workshop was held from 27 April to 1 May and included some 250 participants from 30 countries presenting over 200 talks on a multitude of subjects. The program reported on current developments in DIS and QCD, as well as updates of the latest results from the LHC, HERA, Tevatron, Jefferson Lab, RHIC and fixed-target experiments. It also covered related theoretical topics and future experimental opportunities.

Physics Topics

The workshop began with a full day of plenary reports on recent progress from both the experiment and theory frontiers; these excellent overview presentations stimulated extensive discussion and generated interest for the upcoming parallel talks. This was followed by two and a half days of parallel talks, organized around seven themes: structure functions and parton densities; small-x, diffraction and vector mesons; electroweak physics and beyond the Standard Model; QCD and hadronic final states; heavy flavors; spin physics; and future experiments.

Work on the structure of the proton has seen tremendous advances recently. The final HERAPDF2.0 results were presented, as well as updates from the individual PDF groups. These discussions were very timely, as the PDF improvements will help with the analysis of the LHC Run 2 (which was just beginning as the workshop was in progress).

There were also extensive updates from the LHC on the properties of the Higgs boson, as well as prospects for searching for new Higgs-like objects including SUSY, extra gauge bosons (W', Z') and other exotica. Precision measurements from both RHIC and LHC experiments can also place constraints on new physics signatures such as "dark photons." Sensitive legacy measurements from the Tevatron were also presented.

Figure 2: The DIS2015 workshop hosted over 250 physicists from 30 countries.

On the heavy flavors frontier we saw new improvements on the theoretical calculations matched with new experimental measurements from RHIC and LHC. Heavy flavor production is an incisive tool which can probe many features of QCD; however, the heavy quark mass introduces an additional scale which complicates the theoretical calculations. Nevertheless, new techniques, clever ideas, and hard work have enabled us to make progress in this area.

The spin physics session had extensive discussions on HERMES and COMPASS data as well as measurements from RHIC and Jefferson Lab experiments. This was complemented on the theoretical side by advances in generalized PDFs, which can reconstruct the proton structure in 3D.

In the areas of small-x, diffraction and vector mesons, there were a wide range of interesting topics presented, including parton saturation and shadowing, nonlinear evolution, tests of factorization, and rapidity gap physics for both protons and nuclei.

We also heard about the future landscape of DIS, including the JLab 12 GeV upgrade, the Deep Underground Neutrino Experiment (DUNE) at the Long-Baseline Neutrino Facility (LBNF), the Electron-Ion-Collider (EIC) and the LHeC. The combination of these projects would vastly extend the reach of DIS to study matter from the lowest to highest energies and densities.

Social & Outreach Activities

The workshop program made room for several social and outreach events, including a public lecture entitled “If the Universe is the answer, what is the question?” This presentation featured four workshop physicists discussing critically important unanswered physics questions that upcoming experiments might help resolve. The presentations were stimulating and thought provoking, and gave the local audience a non-technical glimpse of issues discussed at the workshop.

The social highlight of the meeting was the "Night at the Science Museum" conference banquet, which was held at Dallas’ new Perot Museum of Nature and Science. The museum blends art, technology and science with renowned interactive and hands-on scientific exhibits which flow across multiple levels in a building of a creative architectural design situated in the heart of downtown Dallas. Conference members enjoyed a “strolling” catered dinner which meandered from the upper exhibits down to the entry-level atrium, where the event culminated with desserts, coffee, and discussion.

Figure 3: The conference banquet venue was the Perot Museum of Nature and Science.

Workshop's Impact & External Support

The workshop demonstrated how "DIS and Related Subjects" permeate a broad range of physics topics from hadron colliders to spin physics, neutrino physics and more. There is still much work to be done and much information to be extracted from the latest experiments. The good news is that the DIS Workshop series will continue next year, as DESY will host DIS2016 in Hamburg Germany 11-15 April 2016.

The workshop was generously supported by Brookhaven National Laboratory (BNL), CERN, DESY, Fermilab, Jefferson Lab, the National Science Foundation (NSF), the U.S. Department of Energy (DOE), and SMU.

As editors, we would like to thank the members of the International Advisory Committee for allowing Dallas to host this meeting, the Physics Program Committee for selecting outstanding speakers and conveners, and the Local Organizing Committee for a flawless execution of the local logistics. All of the above contributed to the success of the workshop.

The DIS2015 conference website is: **http://www.dis2015.org**

International Advisory Committee (IAC):

Halina Abramowicz (Tel Aviv)
Barbara Badelek (University of Warsaw)
Sergio Bertolucci (CERN)
Ian Brock (Bonn)
Allen Caldwell (Munich)
Amanda Cooper-Sarkar (Oxford)
John Dainton (Liverpool)
Cristinel Diaconu (Marseilles)
Rolf Ent (Jefferson Lab)
Joel Feltesse (Saclay)
Stefano Forte (Milano)
Elisabetta Gallo (Florence)
Rolf-Dieter Heuer (CERN)
Robert Klanner (Hamburg)
Max Klein (Liverpool)
Aharon Levy (Tel Aviv), Chair
Lev Lipatov (St. Petersburg)
Joachim Mnich (DESY)
Hugh Montgomery (Jefferson Lab)
Rosario Nania (Bologna)
Fredrick Olness (Dallas)
Juan Terron (Madrid)
Robert Thorne (London)
Katsuo Tokushuku (KEK)
Steven Vigdor (BNL)
Matthew Wing (London)

Physics Program Committee (PPC):

Abhay Deshpande (Stony Brook)
Kenichi Hatakeyama (Baylor)
Robert Kehoe (SMU)
Thia Keppel (JLab)
Jorge Morfin (Fermilab)
Pavel Nadolsky (SMU)
Fred Olness (SMU)
Joseph Owens (FSU)
Jianwei Qiu (BNL)
Pat Skubic (Oklahoma)
Karl Wachs (SMU)
Markus Wobisch (Louisiana Tech)
Jae Yu (UT-Arlington)

Local Organizing Committee (LOC):

Benjamin Clark
Jodi Cooley
Simon Dalley
Ana Firan
Eric Godat
Richard Guarino
Kenneth Harvey
Michele Hill
Robert Kehoe
Florian Lyonnet
Cas Milner
Pavel Nadolsky
Fred Olness
Lacey Porter
Randall J. Scalise
Stephen Sekula
Karl Wachs