FOREWORD

The Eighth Workshop "Continuous Advances in QCD 2008," was held at William I. Fine Theoretical Physics Institute, University of Minnesota, on May 15-18, 2008. It was the latest in a series, begun in 1994, which has grown into a major international event. The Workshop has attracted the most active researchers working at the cutting edge of QCD and more generally on the dynamics of gauge theories.

The main themes of the workshop were the latest high-order calculations in QCD and in more general gauge theories, the physics of strongly interacting particles containing heavy quarks, the behavior of quarks and gluons under the extreme conditions of high temperature and/or density, and the novel methods of studying gauge filed dynamics using its correspondence with a higher-dimensional gravity theory. These areas of research and the problems at their intersection are currently the most rapidly developing, and the Workshop has attracted the leading experts in these areas.

The new fascinating results of complex high-order calculations presented at the Workshop find their applications, in addition to QCD proper, in a broad variety of subjects ranging from positronium molecules and ions to supergravity. The heavy quark physics, including that of charmed and beauty hadrons as well as heavy quarkonia attracts an unprecedented interest due to the abundance of new experimental data, some of those being quite unexpected. The talks by the experts in this field presented new ideas on such topics as understanding the new types of heavy hadrons, oscillations of charm and beauty, and others.

The behavior of matter made of quarks and gluons at high temperature and/or density opens the ways of understanding phenomena in the early Universe in super dense stars and in the collisions of heavy ions experimentally studied at the collider RHIC in Brookhaven. The leaders in these studies have presented new ideas and perspectives in this field.

The newly developed method of study based on holographic correspondence were presented by the pioneers of this method in its general aspects as well as in its application to the high density quark-gluon matter and to

description of the hadronic spectra in QCD. Traditionally, a lively interest was attracted by the talks on general aspects of gauge dynamics, including the supersymmetric versions and topological configurations.

By and large, it is fair to say that the Workshop has further developed "interdisciplinary" studies in the most vibrant areas of high-energy theory and made a significant contribution towards cross-fertilization of ideas of string/brane theory, traditional gauge field theory and the studies of specific particles, processes and phenomena.

Most of the electronic slides of the talks are available online. The files as well as additional information about the Workshop can be accessed from the URL

http://www.ftpi.umn.edu/qcd08/

M. Voloshin
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