

## PREFACE

This volume presents the proceedings of the *Fifth International Workshop on Chiral Dynamics: Theory and Experiment*, which was hosted by Duke University in association with the Triangle Universities Nuclear Laboratory (TUNL). The location of the workshop was The William and Ida Friday Center for Continuing Education, located in Chapel Hill, North Carolina. Sponsors for the workshop included the School of Arts and Sciences at Duke University, TUNL, the Physics Departments of Duke, North Carolina State University and the University of North Carolina, Jefferson Lab, the Laboratory for Nuclear Science at MIT, Institute of Physics (IoP), CAEN Technologies Inc., and Wiener Plein & Baus, Ltd. The fourth workshop was held in Juelich in 2003, while the sixth workshop will be organized in Bern, Switzerland in 2009.

The main purpose of these workshops has been and continues to be the bringing together of physicists working in the field of Chiral Dynamics, so that they can discuss and debate the most important new developments as well as to explore the most promising new directions for both theory and experiment. One of the keys to the success of previous workshops has been perceived to be the excellent balance between theorists and experimentalists attending these workshops. This balance was, we believe, achieved again.

The workshop was organized along the traditional lines of the previous workshops in this series. There were four mornings of Plenary talks, and three afternoons of Working Group Sessions. The final session (on Friday morning, September 22) consisted of summary talks from the working group leaders.

The Plenary talks emphasized progress and exciting new results in areas including Chiral Perturbation Theory, tests of the Standard Model, Chiral Nuclear Forces and very recent Lattice QCD calculations. New experimental results from Mainz, JLAB, MIT-Bates, RIKEN and HI $\gamma$ S were also discussed. There were three working groups: Goldstone Boson Dynamics (G. Colangelo and S. Giovannella); Hadron Structure and Meson-Baryon Interactions (T. Hemmert, J. Feldman and A. Nathan); and Few-Body Physics (H. W. Hammer, D. Phillips, and N. Kalantur). These working groups com-

prised one of the most dynamic and productive aspects of the workshop, and were usually the venue for some of the most intense and informative discussions. The Working Group Summary Talks, among other things, addressed the important question of "what new experiments and calculations are needed in order for the field to make significant progress".

The location of the Workshop is connected to the commissioning of the newly Upgraded High Intensity Gamma-Ray Source (HI $\gamma$ S) at TUNL/Duke University. This facility will allow for detailed precision studies at energies just above and below pion-production threshold using intense, nearly monoenergetic, 100% polarized gamma-ray beams and polarized targets. In keeping with this setting, we emphasized some of the relevant physics which will be studied at HI $\gamma$ S including few-body physics, nucleon spin-polarizabilities, the GDH integrals, and near-threshold pion photoproduction.

The organizers are especially grateful to Mohammad W. Ahmed, the Scientific Secretary, for his hard work in making the workshop a success. His attention to the details of all of the arrangements before, during and after the workshop, was crucial to this success. The success of this workshop was also the result of the enthusiastic engagement of the participants. The excellent talks by all of the speakers and the hard work of the working group convenors were conspicuous. We are also very grateful to the International Advisory and Program Committees for their help in designing the program. The advice, support and engagement of the local organizing committee members was also very much appreciated. Finally, we wish to thank all of the sponsors of the workshop for their generous financial contributions, the staff of the Friday Center for their excellent running of the facility during our stay, and the graduate students at TUNL for their help before and during this workshop.

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