

# **Relativity, Supersymmetry, and Strings**

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## PREFACE

The first international conference on relativity physics and parallel computing took place February 24-28, 1986, at the International Institute of Theoretical Physics at Utah State University in Logan, Utah. Before proceeding to summarize some of the main points of the conference I would like to make a few remarks about the goals of the International Institute of Theoretical Physics. The Institute undertakes frontier research in both pure and applied physics and is housed in the new physics building at Utah State University. The applied research is in solar energy and optical parallel computing. We are in the midst of building four very efficient solar collectors and, in the very near future, parts of an optical parallel computer in the Institute.

The pure research is concerned with relativity physics, particle physics, condensed matter physics, quantum systems, etc. On the macroscopic level, we are concerned with possible experimental tests of Einstein's General Relativity. On the microscopic level, we are interested in the unification of gravitation with the other interactions. In addition to research, the International Institute sponsors visiting scientists and encourages collaborations, etc.

To return to the conference, Professor Ehlers, Professor Rindler, and Professor Rosenblum represented the general relativity part of the conference. Professor Ehlers spoke about the problems connected with quantizing general relativity. The main point is that it is very difficult technically and conceptually to quantize a theory like general relativity which is both a field theory and Riemannian geometry at the same time. Professor Rindler gave a set of lectures concerning cosmological models. He emphasized the geometrical aspects of the models. Professor Rosenblum, after reviewing tests of general relativity using the binary pulsar, went on to discuss how one may use clocks for tests of both dragging of inertial frames and gravitational radiation. He ended his lecture with an introduction to Parisi-Wu stochastic quantum field theory with the intention of applying it to quantum gravity.

The next set of lectures concerned the unification of the interactions in particle physics. Professor Slansky began with an introduction to string theory, and Professor Raby gave lectures on supersymmetry phenomenology.

To represent the applied physics aspects of the International Institute of Theoretical Physics, Dr. Martin Walker gave a set of lectures on parallel computing. His company, Myrias Corporation, is in the midst of building one.

Shorter contributions were made by Professor Wu on "Quantum Curvature and Anomalies in Gauge Theory" and Zi Wang on "Strings and Cosmology." The participants found the conference very stimulating, as we hope the readers will.

Arnold Rosenblum, Director  
International Institute of  
Theoretical Physics

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