

10 years of Theoretical Physics Laboratory

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The Theoretical Physics Laboratory was established at the dawn of the new century, in October 2001, as the first laboratory in more than 30 years that is dedicated purely to theoretical studies, since the closure of the Theoretical Physics Laboratory headed by Dr. Hideki Yukawa, Japan's first Nobel Laureate. That was the start of my days of commuting between RIKEN and my office in Kyoto University, which was previously occupied by another Japanese Nobel Laureate, Dr. Toshihide Maskawa.

Running a laboratory in RIKEN made a significant change in my research life, but RIKEN itself was also about to go through a tremendous reshaping process. One of such moves was the establishment of Nishina Center for Accelerator-based Science, under the leadership of Dr. Yasushige Yano. At that time, we were still struggling to establish the presence of theoretical studies in RIKEN. Then, Dr. Yano, who realized the immense importance of theoretical study, invited our group to form a research center together with the accelerator groups and other laboratories for nuclear physics. By securing our position in the framework of Nishina Center, we could establish our presence and also the status of theoretical studies in RIKEN. This is how we started participating in the RIKEN Accelerator Progress Report. Although our participation as the Theoretical Physics Laboratory was rather brief, I believe we were able to contribute around 47 articles to the Report.

It is my great honor, therefore, to contribute to this commemorative 50th issue of the RIKEN Accelerator Progress Report. I would like to thank the editors of the Report for kindly inviting me to write this entry. Allow me to take this opportunity to present a brief sketch of the activities that were took place at the Theoretical Physics Laboratory. First, the following list of research subjects should give a certain idea of the scope of the activities of our group:

- (1) String Theory as a Fundamental Theory
 - Matrix Models
 - Non-commutative Geometry
 - String Field Theory
- (2) Application of String Theory
 - Holographic QCD
 - Black Hole Entropy
- (3) Dynamics of Fields
 - Lattice Theory
 - Higher-order QED

- (4) Use of Fields and Strings

- Phenomenology
- Color Superconductivity

These achievements were only possible with the help of Tsukasa Tada, Vice Chief Scientist, Makiko Nio, Nishina Center Research Scientist, and the following former members who have left RIKEN:

Masashi Hayakawa

Associate Professor at Nagoya University

Hiroshi Suzuki

Professor at Kyushu University

Koji Hashimoto

after being Associate Chief Scientist, now Professor at Osaka University

Many young researchers, all of whom I cannot name owing to the limitation of space, also contributed to the activities of our group. At one point, our Laboratory accommodated eight Special Post-Doctoral Researchers.

Furthermore, researchers from all over the world visited us for presenting seminars or for collaborations. The following list includes some of the prominent researchers who visited us:

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| · Harry Lipkin | · Herman Verlinde |
| · Antal Jevicki | · M. Staudacher |
| · Yuri Makeenko | · J. Maharana |
| · Holger Nielsen | · Robert Dijkgraaf |

The following distinguished scientists also stayed at our group for a prolonged period, most of them multiple times, to conduct their research activities and collaborations:

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| · Toichiro Kinoshita | · Amihay Hanany |
| · Al. Zamolodchikov | · Avinash Dhar |
| · Ivan Kostov | |

Thus, one could say that the Theoretical Physics Laboratory at RIKEN was beginning to establish its presence in the international research community. Although the Theoretical Physics Laboratory itself ceased to exist, I hope its legacy has been passed on to the current activities for theoretical studies at RIKEN.

To conclude, I would like to thank all the former members of the Theoretical Physics Laboratory for participating in this undertaking. Special thanks go to Dr. Kanetada Nagamine, who paved the way to my position as an invited chief scientist at RIKEN. I am also grateful to all the members of Nishina Center, especially Dr. Yasushige Yano, the founding director, and Dr. Hideto En'yo, the succeeding incumbent.

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