

Conceptualizing a Multiverse



Yasunori Nomura
Professor, Physics

CURRENT RESEARCH

Understanding the origin of the universe and the fundamental principles of nature that guide it

The 1998 Nobel Prize discovery of the accelerating expansion of our universe has led to the dramatic new view that our universe may be one of the many universes in which low energy physical laws take different forms: the multiverse. This picture is also supported theoretically by the fact that accelerated expansion of space is generically eternal (eternal inflation) and that string theory possesses a complicated vacuum structure (string landscape). This new view, however, leads to the difficult problem of defining probabilities in infinitely large spacetime.

Dr. Yasunori Nomura, of the University of California, Berkeley, works mainly with particle physics theory and cosmology to study the history of the universe. His research is founded upon the view that quantum mechanics is essential to understanding the multiverse, even at the largest distance scales. He presents an explicit framework that allows us to treat the multiverse in a consistent fully quantum mechanical manner. Therefore, his research answers the age-old questions of where we come from and how the world came to be.

Current projects include:

- Exploring how observations fit into our discovery of the fundamental quantum theory of gravity and potentially testing these ideas in current and future observations.
- Performing research in conventional particle physics which helps to understand the origins of structures we observe in our universe. In particular, he is interested in learning what new physics beyond the standard model we can expect.
- Dr. Nomura studies the physics of extra dimensions to gain insight into its theories and phenomenology. Extra dimensions may...

AFFILIATION



University of California, Berkeley

EDUCATION

- B.S., in Physics, 1996 , University of Tokyo, Japan
- Ph.D., in Physics, 2000 , University of Tokyo, Japan

RESEARCH AREAS

Technology, Space, Computational Sciences / Mathematics, IOT, Devices, Data

FUNDING REQUEST

Your contributions will aid in the continued research of theorist Dr. Yasunori Nomura as he seeks to understand the fundamental principles of nature and the origin of the universe. Your donations will support the costs of maintaining an extra postdoc and/or travels thereby allowing for the potential paradigm shift in understanding our universe.

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