1. Greetings from the Project Leader

A selected project for Global COE Program:
Formation and Development of Mathematical Sciences Based on Modeling and Analysis

We live in a society where various complex systems continuously evolve with dynamic changes. In addition to the tremendous number of components in a complex system, these components interact in intricate manners, further increasing the complexity. Recent technological advances have enabled substantial amounts of accurate date to be experimentally measured in these systems. However, elucidating phenomena derived from complex systems based on this enormous volume of data and the complexity among the components remains a significant challenge. I strongly believe that conquering these difficulties is one of the most challenging missions for mathematicians in the 21st century. The key to overcome this challenge resides in innovation of new mathematical modeling, which should elucidate complex phenomena. Although we value conventionally utilized realistic models that aim to quantitatively reproduce phenomena, our program strives to establish new mathematical modeling based on the construction of an extraction model to clarify the essences of phenomena.

Meiji University is a forerunner in Mathematical Sciences as we understand that bridging phenomena and mathematics by modeling and analysis is critical for elucidating complex phenomena as well as inspiring innovation. Based on this belief, we established the Meiji Institute for Advanced Study of Mathematical Sciences (MIMS) as an advanced center for education and research. Building on the strong foundation of MIMS, our Global COE Program, "Formation and Development of Mathematical Sciences Based on Modeling and Analysis", emphasizes studies on complex phenomena in society, nature, and biology in order to attain a clear-cut understanding of these phenomena, and ultimately create an internationally renowned center for Experimental Mathematical Sciences based on modeling and analysis. I am confident that our vision will not only contribute

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to society, but will also expand the realm of modern mathematics, thereby establishing new mathematics connected to human life and society.

Another important task of our program is to educate young researchers. Hence, we provide a broad curriculum on advanced knowledge in mathematics as well as technologies that help to clearly understand the nature of phenomena hidden behind complexity. By sending talented young researchers with the ability to incorporate different fields to industry, we will build a bridge to strengthen the university and industry ties as well as stimulate innovation.