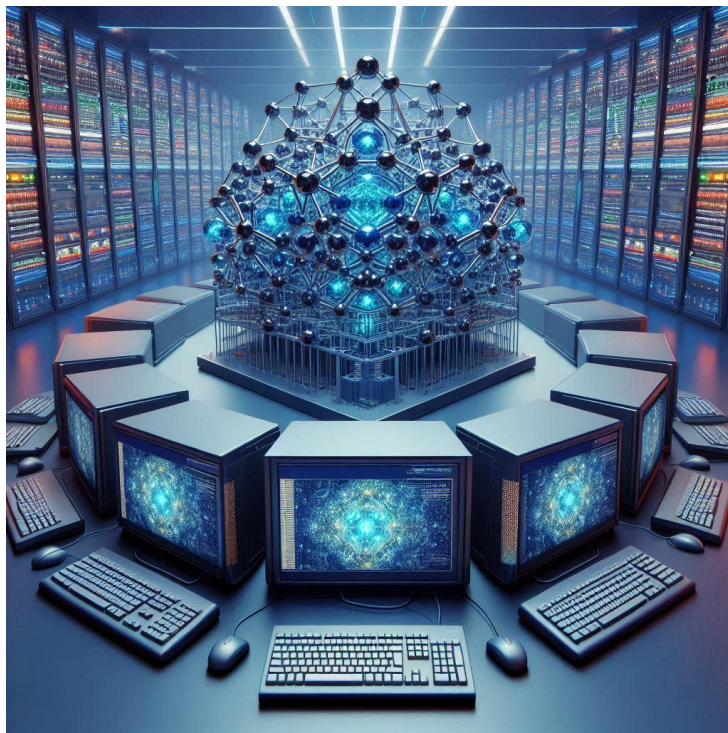


Create Your Own Material! An Introduction to Supercomputers

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With advances in science and technology, computers with advanced computational capabilities (supercomputers) play a crucial role in many fields. Japan's pride, the supercomputer "京" (Kei), began operation in 2011 and became the world's fastest due to its remarkable processing speed. "京" achieved significant results in weather forecasting, earthquake simulation, and drug development. Its successor, "富岳 (Fugaku)," began operation in 2020 and boasts approximately 100 times the computational speed of "京." Fugaku is



utilized in a wide range of fields, including simulations to prevent the spread of the novel coronavirus, climate change predictions, and AI research. Thus, computer simulations have become an integral part of our daily lives.

In this lecture, as an introduction to computational science, you will have the opportunity to design your own materials and calculate their properties using high-performance computers.

Through this lecture, you will experience the fusion of materials science and computational science, aiming to understand the importance and potential of computer simulations in modern research. Specifically, the goals are to develop the following skills:

Understanding the basics and applications of materials science

Acquiring fundamental knowledge of crystal structures and materials science

Practically acquiring skills in crystal design and simulation techniques

Enhancing data analysis and presentation skills

Let's experience the power of materials and take the first step as future researchers.

