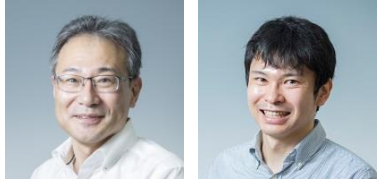


Energy Physics Engineering

Neutron Device Engineering



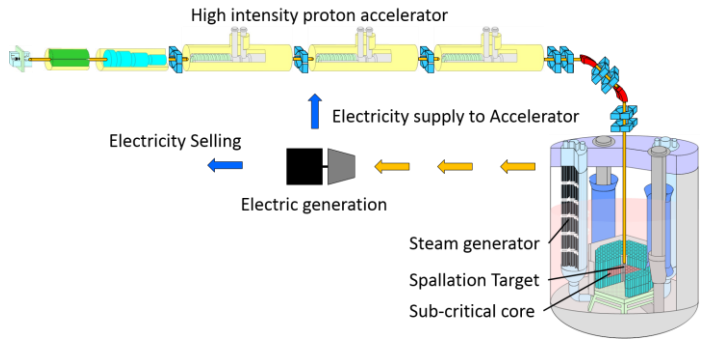
Dept. of Nuclear Science and Energy Engineering

Professor (concurrent) Hidetoshi HASHIZUME, Assistant Professor Naoto AIZAWA
– Research of Advanced Nuclear Fission System –

Nuclear fission systems (nuclear reactors) are the important electrical energy sources which support social infrastructure. They also have great potentials as the low-environmental-load and long-life energy source and the seeds of the innovative research field such as the applications to nuclear transmutation, deep space utilization and hydrogen production. Our laboratory tackles “Advanced Nuclear Fission System” which supports present and future life.

Research and Development (R&D) of Advanced Nuclear Fission System

- Study of Nuclear Transmutation
- Study of Accelerator-Driven System (ADS)
- Study of Various Nuclear Fuel Cycle Scenarios
- Study of Advanced Reactor such as Small Reactor and Space Reactor



● Accelerator-Driven System

The disposal of high-level radioactive waste (HLW) is the unavoidable problem to utilize nuclear energy. To solve this problem, we address the research and development of nuclear transmutation technology.

Nuclear transmutation technology is the method to transmute high-toxic and long-life nuclides included in HLW into short-life and stable nuclides by nuclear reaction.

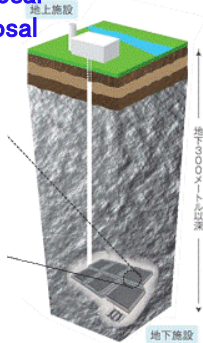
We work on the research and development of Accelerator-Driven System (ADS), one of the candidate systems for nuclear transmuter. Besides, we investigate the way to dispose various nuclear waste.

Study of Radioactive Waste Disposal

- Criticality safety after waste disposal
- Radiation safety after waste disposal

Radioactive waste is discharged after nuclear system operation, and its characteristic is changed by the condition of system.

We study the safe disposal method of the various wastes from the aspect of criticality safety and radiation safety

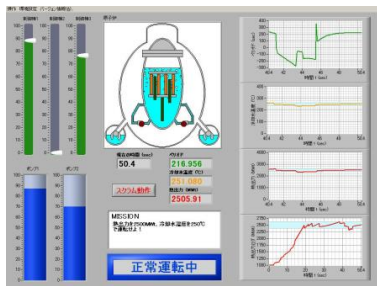


Picture taken From NUMO

● Geological Disposal

Improvement of Light Water Reactor

- Core Design by Advanced Analytical Method
- Influence evaluation of advanced fuel loaded core



● Development of reactor operation simulator

Light Water Reactor (LWR) has been widely operated as a electrical power source over the world. R&D of LWR has been also performed to improve its safety and economical efficiency.

We research the core design with advanced fuel by using advanced analytical method.

Topics of Research

- Study of Nuclear Transmutation
- Study of Accelerator-Driven System
- Study of Various Nuclear Fuel Cycle Scenarios
- Study of Advanced Reactor such as Small Reactor and Space Reactor
- Study of Radioactive Waste Disposal
- Study of Boiling Water Reactor Core Design by Advanced Analytical Method