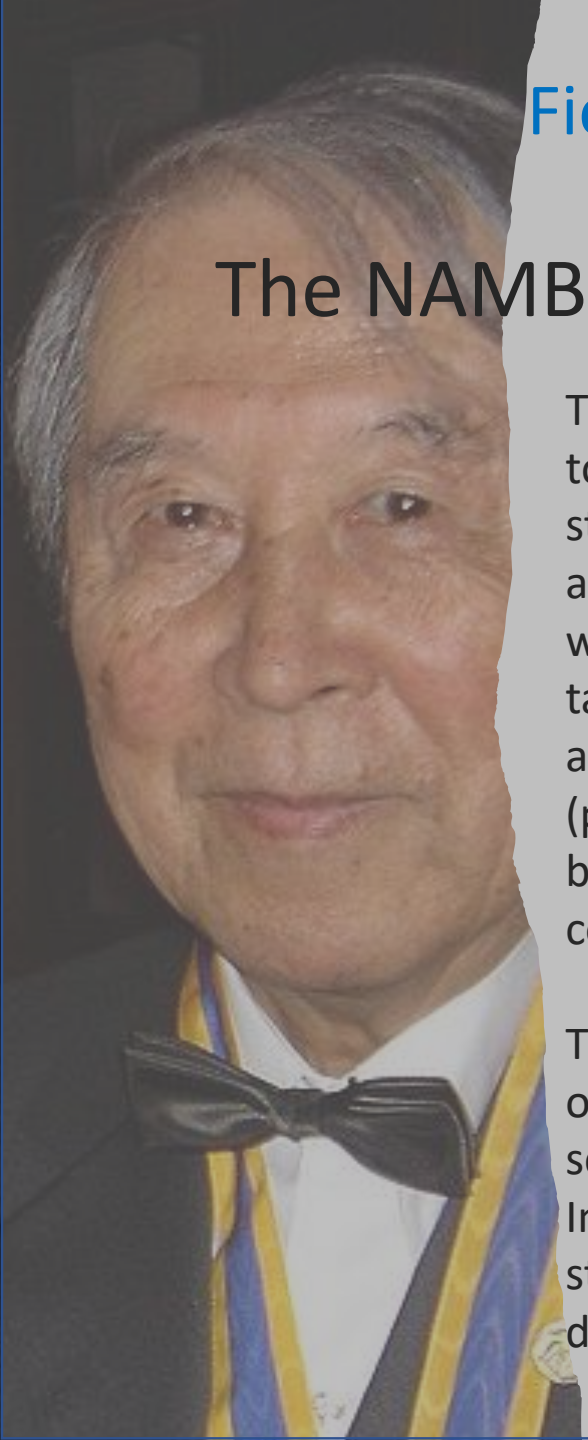
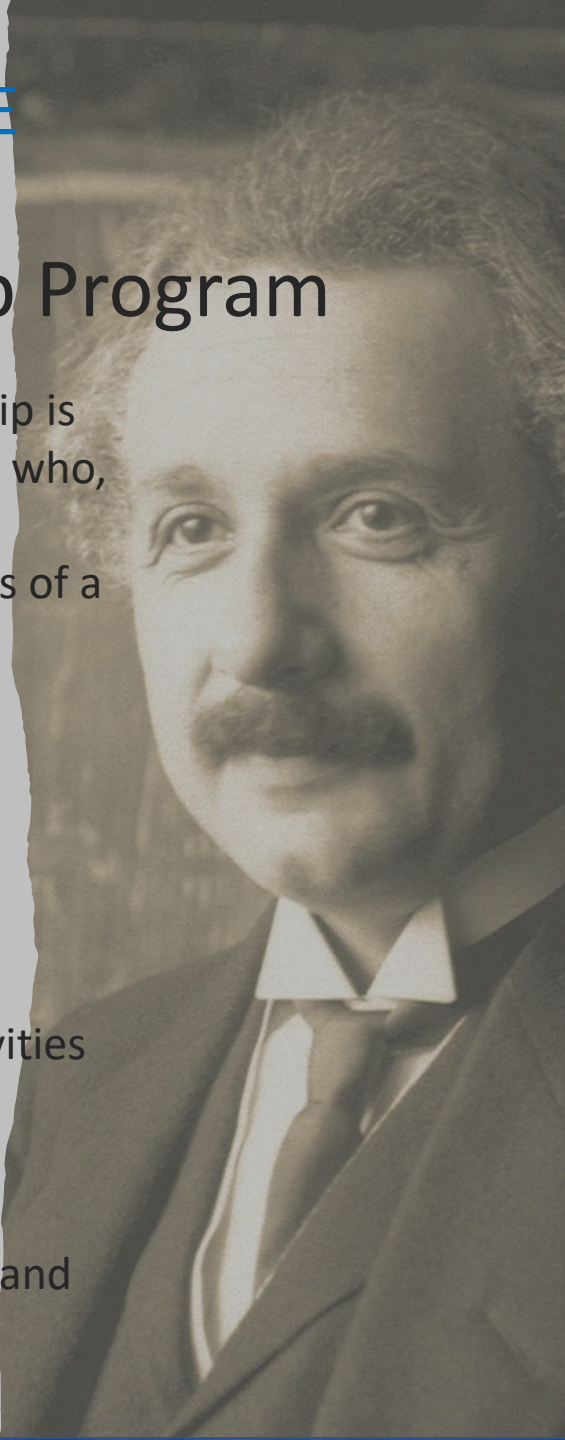


Field of QUANTUM SCIENCE

The NAMBU-EINSTEIN Fellowship Program

The goal of the Nambu-Einstein fellowship is
to develop advanced research personnel who,
starting with "quantum,"
are exposed to the knowledge and values of a
wide range of academic disciplines,
take a bird's-eye view,
and collaborate to create new values
(paradigm shift)
based on free thinking unconstrained by
conventional concepts.

This program supports the research activities
of graduate students in a wide range of
scientific and technical disciplines.
In addition, it also helps the fellowship
students to improve their research skills and
develop their career paths.



Prof. Yoichiro Nambu: “Paradigm Shift”

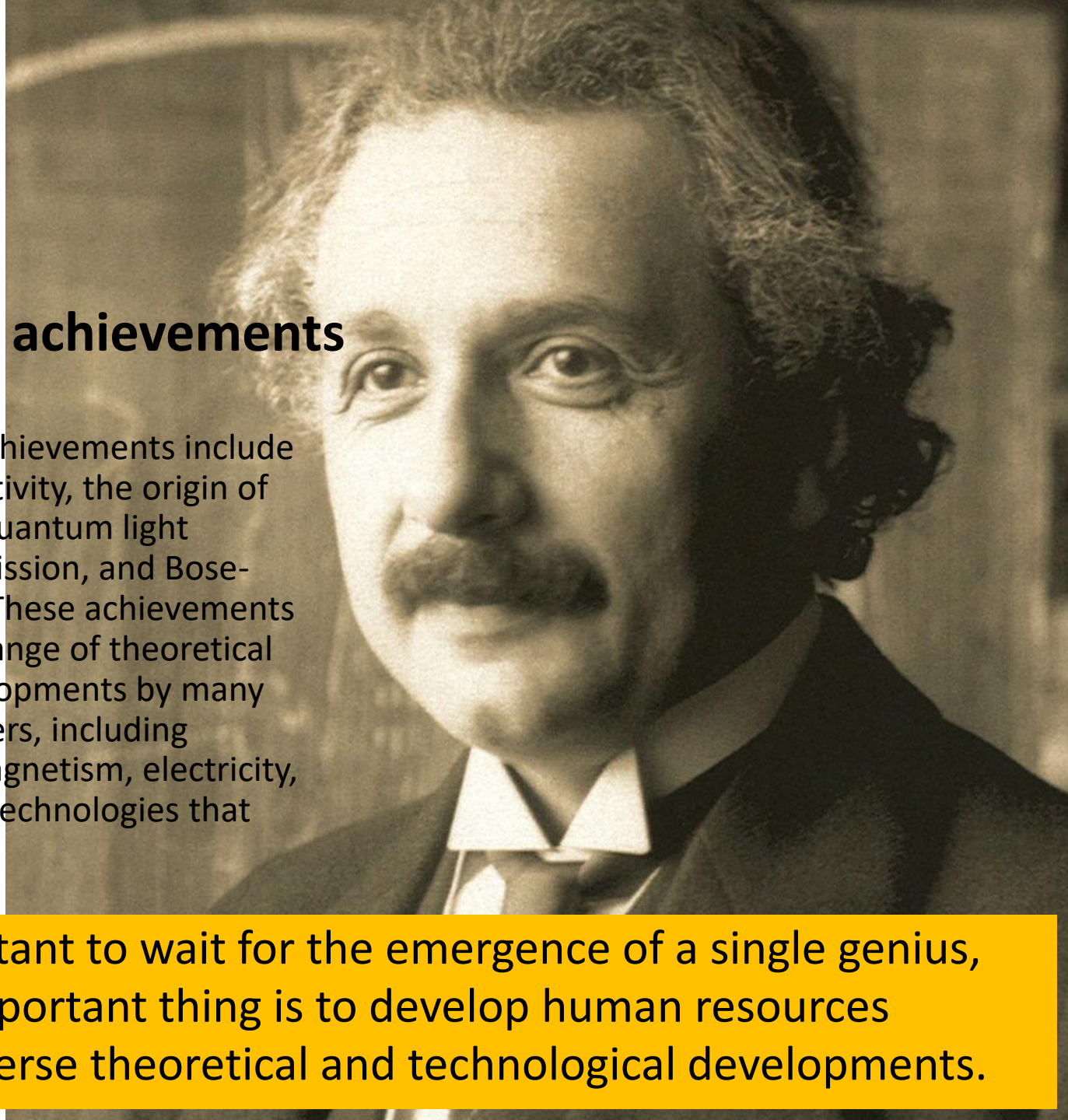
Spontaneous symmetry breaking, one of the great achievements of Nobel laureate Professor Yoichiro Nambu, was a "paradigm shift" in particle physics.

Prof. Nambu developed the concept of "spontaneous symmetry breaking" based on the idea of "superconductivity," in which the electrical resistance of a particular material becomes zero when it is cooled to ultra-low temperatures, and incorporated it into his particle theory.

Prof. Nambu brought together the seemingly distant disciplines of ultracold condensed matter physics and particle physics.

For a paradigm shift,

both the development of various sciences and technologies in a wide range of fields and a deep understanding of them are essential.

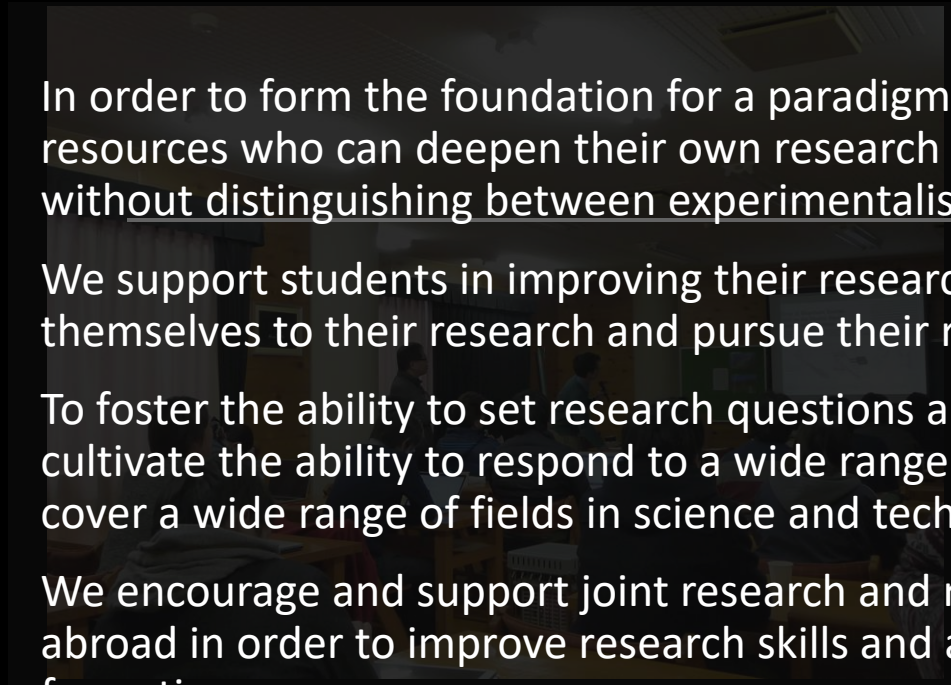


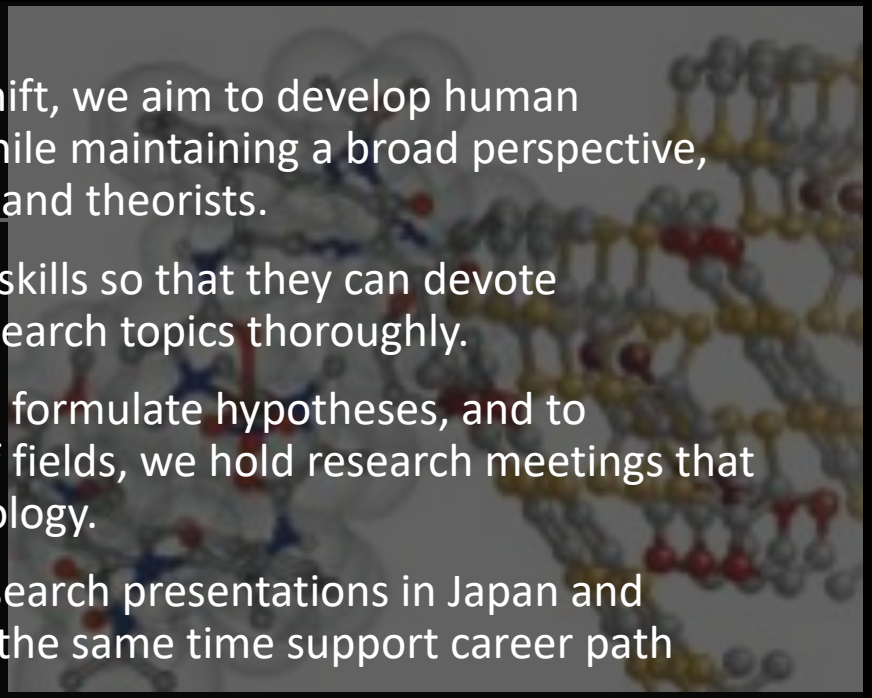
Einstein’s great achievements

Einstein's many great achievements include special and general relativity, the origin of Brownian motion, the quantum light hypothesis, induced emission, and Bose-Einstein condensation. These achievements were based on a wide range of theoretical and technological developments by many researchers and engineers, including mathematics, electromagnetism, electricity, optics, and the various technologies that support them.

While it is important to wait for the emergence of a single genius, the most important thing is to develop human resources who can lead diverse theoretical and technological developments.

The Nambu-Einstein Fellowship Curriculum Policy





In order to form the foundation for a paradigm shift, we aim to develop human resources who can deepen their own research while maintaining a broad perspective, without distinguishing between experimentalists and theorists.

We support students in improving their research skills so that they can devote themselves to their research and pursue their research topics thoroughly.

To foster the ability to set research questions and formulate hypotheses, and to cultivate the ability to respond to a wide range of fields, we hold research meetings that cover a wide range of fields in science and technology.

We encourage and support joint research and research presentations in Japan and abroad in order to improve research skills and at the same time support career path formation.

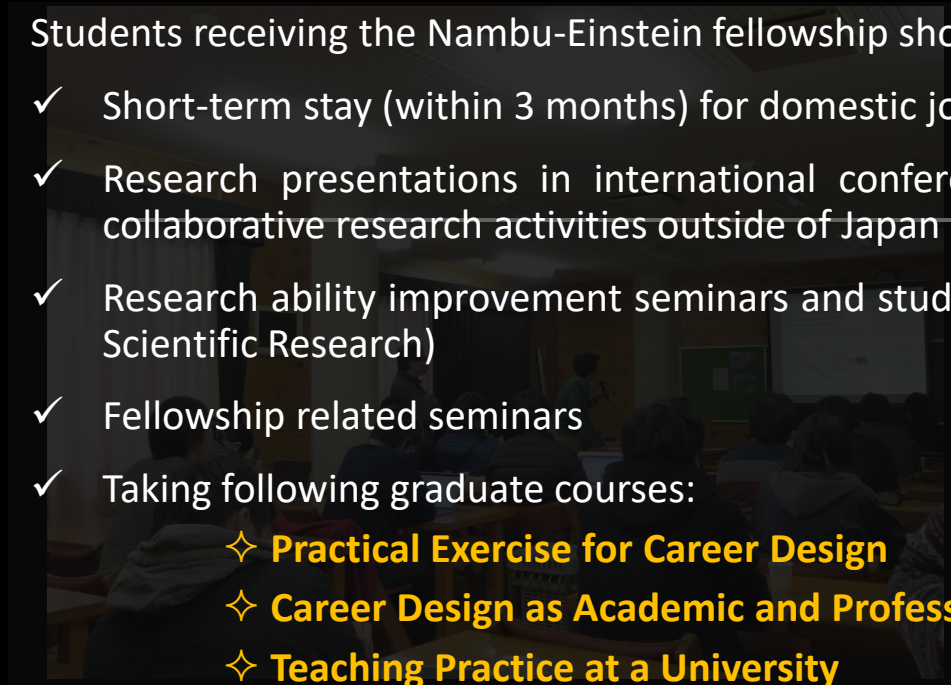
We encourage the participation in graduate education programs to support interaction with industry and the acquisition of transferable skills.

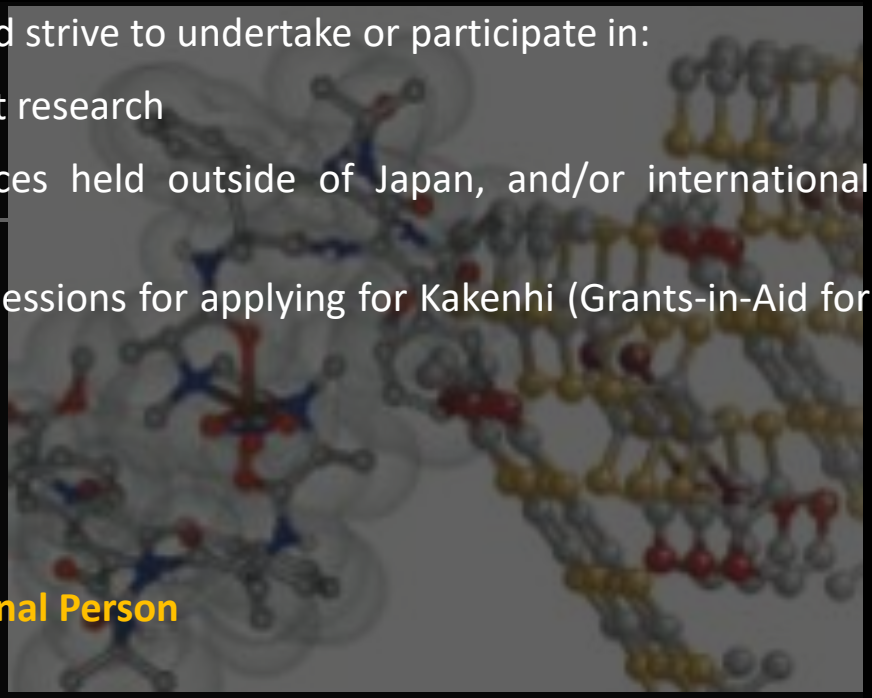
Duties of students receiving the Nambu-Einstein fellowship

Students receiving the Nambu-Einstein fellowship should:

- ✓ Submit an annual report of results for the year and for the future research plan → It will be reviewed (every year)
- ✓ Apply for the program of JSPS Research Fellowship for Young Students (every year)
- ✓ Participate in the following core programs (every year), and make a presentation (once in three years):
  - ✧ **Einstein Seminar**
  - ✧ **Proposal Defense**
- ✓ Participate in the Fellowship General Seminar (every year), make a presentation (once in three years)
- ✓ Participate in international conferences and make a presentation (once in three years)
- ✓ Take following graduate courses:
  - ✧ **Advanced Technology and Science in Chemical industry, or**
  - ✧ **Advanced Lecture on Global Management**
- ✓ Participate in the Interactive Matching event (every year) , and make a poster presentation (once in three years)
- ✓ Personal interview with a mentor (twice a year)

Initiatives that fellowship recipients should strive to undertake or participate in





Students receiving the Nambu-Einstein fellowship should strive to undertake or participate in:

- ✓ Short-term stay (within 3 months) for domestic joint research
- ✓ Research presentations in international conferences held outside of Japan, and/or international collaborative research activities outside of Japan
- ✓ Research ability improvement seminars and study sessions for applying for Kakenhi (Grants-in-Aid for Scientific Research)
- ✓ Fellowship related seminars
- ✓ Taking following graduate courses:
  - ✧ **Practical Exercise for Career Design**
  - ✧ **Career Design as Academic and Professional Person**
  - ✧ **Teaching Practice at a University**
  - ✧ **Science English, Academic Writing, Academic Communication Courses**
- ✓ Taking the Special Training Course for Researchers (Practical Exercise on Career Design)