Involving students in research: success factors and challenges

Japan – Norway Partnership Programme

Numerical simulations of rocket-plasma interaction

UTFORSK
Japan-Norway Partnership Programme

The Japan-Norway Partnership Programme is a research and education collaboration as well as exchange program between Kobe University and University of Oslo. The area of collaboration is numerical simulation of rocket-plasma interactions.

The Japanese-Norwegian Partnership Programme between the University of Oslo and Kobe University provides a unique study opportunity for students interested in space science and numerical modeling. The Kobe-Oslo project is centered on numerical simulations of interaction between sounding rockets and plasma. Participating students will learn how to use and create large scale numerical models, run them on supercomputers, and relate their results to ongoing space missions.

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EISCAT – radar, Superdarn, Optical studies

Cluster, Swarm, ACE

IONOSPHERE
Kobe-Oslo project is related to the RCN funded research project "ICI 4DSpace 2014-2016: Investigations of cusp irregularities by 4D Space measurements". In order to analyze data from sounding rocket properly, it is essential to model and understand the plasma phenomena on the rocket and smaller scales.

Investigation of Cusp Irregularities

ICI 2 : 5DEC2008
ICI 3 : 3DEC2011
ICI 4 : 18FEB2015
ICI 5 : planned
Project Goals:

(i) Establish long-term education and research exchange programs for students at master and PhD levels
(ii) Increase the mobility of the research staff,
(iii) Encourage exchange of knowledge.

How to achieve these goals?

We use numerical simulations as an educational tool,

and have the following activities:

1. Joint workshops, supervision and courses
2. Study and research stays in Oslo and Kobe
3. Joint publications as the result of the project
4. Joint development of numerical algorithms and educational tools
(1) Joint workshops

In 2015 we successfully organized two intensive workshops one in Japan and one in Norway.

Interdisciplinary in scope, with focus on group work and team building activities.

The program is very popular with students.

Planned no. of participating students: 20
Actual no. of participating students: 33
Simulation project

- Several groups for different simulation models
- Each group consists of four members
- Discussion in English
- Final presentation by each group
(2) Mobility of students and staff

• Students traveling abroad for longer research stays: working in international teams on the projects under joined supervision

• Total exchange for 2015: ca. 12 study months (7 months + 15 weeks + 4 weeks).

• Joined supervision and staff mobility essential for successful exchange!
(3) Joint papers

• Write research papers on simulation results
• Submit them to major science journals
(4) Joint codes
Important elements for success

Connect education and research

Provide hands-on education

Mobility of student and staff members
Challenges

• Language and communication

• Academic calendars

• Students have different priorities in different countries.
Agreement

Memorandum of Understanding between Kobe University and the University of Oslo signed yesterday.

SIU UTFORSK program crucial to achieve this step!
How to establish a good project?

• Find a partner that has genuine interest in education and research and which will equally contribute to the project development.
• Allocate enough time for team-building activities. This is crucial for collaboration in international study teams.
• Think big! But be realistic when it comes to resources and student and staff numbers.
• Discuss it with your partners: students in different countries have different priorities and needs.
• You will need enough time for logistics and scheduling. So plan early.
Contact us if you have any questions!

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