

Rapport for emne FYS4575

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| Stadiuminfo: | Utkast (S1) |
| Sist endret: | 10.03.2023 Christian Thorn (chrthorn) |
| Opprettet i EpN: | Ja |

Generelt

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| Emnekodeforslag | FYS4575 |
| Versjonskodeforslag | 1 |
| Tilknyttede campuser | |
| Studienivå | Fjerdeårsemner, nivå IV (400) |
| Administrativt sted | 185.15.04.00 Fysisk institutt |
| Studieansvarlig sted | 185.15.04.00 Fysisk institutt |
| Vekting | 5.0 |
| Vektingstype | Studiepoeng |
| Navn - bokmål | Eksotiske atomkjerner |
| Navn - nynorsk | |
| Navn - engelsk | Exotic Nuclei |
| Første undervisningstermin | 2023 HØST |
| Siste undervisningstermin | |
| Første eksamenstermin | 2023 HØST |
| Siste eksamenstermin | |
| Språk | Engelsk |

Emneinfo

Kort om emnet

Engelsk:

This course covers exotic atomic nuclei, and how to study them both experimentally and theoretically. The course gives an introduction to the theoretical background for nuclear structure based on the nuclear shell model, and how to calculate predicted shell structure using KSHELL. It also teaches how exotic nuclei are studied at different specialized facilities around the world, for example at RIKEN Nishina Center, and gives a basic introduction to how to analyze data from these experiments.

Hva lærer du?

Engelsk:

After completing the course, you:

- are familiar with the motivation to study exotic nuclei.
- have knowledge of different phenomena that are observed in exotic nuclei.
- are able to perform shell model calculations using KSHELL, including being able to choose appropriate model space and effective interactions, find energy spectra and transition probabilities.
- are able to interpret results from shell model calculations.
- are familiar with production of exotic nuclei using fragmentation and fission.
- are familiar with fragment separators, for example the BigRIPS facility at RIKEN Nishina Center.
- have knowledge of experimental methods to study exotic nuclei.
- are able to analyze multi-parameter experimental data from exotic nuclei.

Opptak til emnet

Engelsk:

Send a short application to [nettskjema].

Only students enrolled in studieprogram:MN2-NUK or students enrolled in the programme studieprogram:MN2-AST may apply. This course should be a part of your approved Study Plan. Contact the Department of Physics if you are unsure if you are eligible to apply.

Anbefalte forkunnskaper

Engelsk:

- emne:FYS3500
- emne:FYS4570
- emne:FYS4505

Overlappende emner

Engelsk:

- 5 credit overlap with emne:FYS9575

Undervisning

Engelsk:

The teaching will either be offered in the form of intensive teaching at summer schools; 2 weeks with 30 hours of lectures and 30 hours of hands-on numerical calculations and student presentations, or as self-study.

Attendance at the school when offered as an in-person course is expected.

The students must present their current master or Ph.D project and receive peer feedback from other attendants at the school.

Eksamen

Engelsk:

- Final home exam in the form of a project assignment which counts 100% towards the final grade.

The home exam should be written in the form of a scientific paper. It should include theory taught during the course as well as KSHELL calculations and data analysis as described in the given task.

Hjelpemidler til eksamen

Engelsk:

All examination support materials are allowed.

Eksamensspråk

Engelsk:

The examination text is given in English, and you submit your response in English.

Karakterskala

Engelsk:

Grades are awarded on a pass/fail scale. Read more about the grading system.

Adgang til ny eller utsatt eksamen

Engelsk:

Students who can document a valid reason for absence from the regular examination are offered a

postponed examination at the beginning of the next semester.

Re-scheduled examinations are not offered to students who withdraw during, or did not pass the original examination.

Kostnader ved å ta emnet

Engelsk:

The location of the intensive course may be in Oslo or abroad. If given abroad there will be travel and housing costs. Students can apply to have these costs covered, and the selection of students for grants is based on the relevance of the course for their Ph.D. or master thesis.

Undervisningssemester

Engelsk:

If the course is offered, a minimum of four students is required for ordinary lectures to take place. If less than four students participate, an exam will be given, but one should not expect ordinary teaching