

# Norwegian Olympiad on Astronomy and Astrophysics

Training week's schedule  
17th - 21st March 2025



## Information:

Norsk Olympiade i Astronomi og Astrofysikk:

<https://www.mn.uio.no/astro/tjenester/publikum/ol-astronomi-og-astrofysikk/>

([1st round exam](#), [2nd round exam](#), [list of actual finalists](#))

On Friday March 21st the students will take the final test. **The top 5 students will be the winners of the national olympiad!**

However, it is at the discretion of the committee to evaluate and choose the students competing at the international competition: [18th IOAA 2025 – Mumbai, India \(11-21 August 2025\)](#).

## Awards:

The top five students winners of the Norwegian competition will receive the following prizes:  
1 Himmelkalenderen 2025, diploma and flowers.

All the finalists will receive a diploma of participation, a mug with our logo, 1 copy of [Almanakk for Norge](#), 1 [planisphere](#).

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## General information

- **Accommodation:** for those staying at the hotel (14 students in total): Twin rooms by the Thon Hotel Ullevål Stadion, [Sognsveien 77C, 0855 Oslo](#) . For more info visit the website: <https://www.thonhotels.no/hoteller/norge/oslo/thon-hotel-ullevaal-stadion/>
- **Meals:** the Astro-OL will provide the students lunches and dinners (breakfast included in the hotel rate for those staying at the hotel) for the duration of the course,

i.e. from Monday to Friday (no dinner on this day). Those travelling on Sunday shall take care of their meals and no reimbursement is possible, unfortunately.

- **Transportation:** travel costs will be reimbursed upon presentation of receipts and the ticket (e.i. boarding pass for flights, train ticket, Ruter tickets). Car rides won't be reimbursed. On Friday 21.03 the students will be asked to fill in a claim form for reimbursements of the travel expenses.

### Subjects to cover:

- Introduction to Cosmology
- Galaxies, how to measure distances at various scales, Hubble's law
- Solar/Stellar structures, stellar evolution
- Solar/planetary System, exoplanets detection methods
- Celestial mechanics (coordinates, time, etc.)
- Two-body objects
- Instrumentation
- Observations
- Practical astronomy (data analysis examples)
- .....

Adapted from the IOAA Syllabus: <http://www.ioaastrophysics.org/syllabus/>

Useful resources:

<https://www.mn.uio.no/astro/tjenester/publikum/ol-astronomi-og-astrofysikk/ressurser/>

Presentation slides at the training will be shared among the students by email after the training week.

### What students need to bring along:

For the classes, the students need to bring a calculator and a ruler. If it is easy to bring along, a laptop could be helpful but it is not necessary, as you will work in small groups. It is up to the student. For the observation evening(s), the students need to bring: warm clothes for staying outside in the evening below zero degrees.

### All the classes will take place at:

Institutt for teoretisk astrofysikk (ITA)

Svein Rosselands hus (kart)

Sem Sælands vei 13

0371 OSLO

Rooms: Peisestua (room 304 - 3rd floor) Auditoriet (room 209 - 2nd floor) and RoCS meeting rooms (K09, K08 - basement).

### Contact info:

- Martina D'Angelo, 96714467 (for emergency only), [mardan@astro.uio.no](mailto:mardan@astro.uio.no), [webpage](#)
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|                                               |                                                                                                                      |                                                       |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| Monday 17/3 Svein Rosselands hus              |                                                                                                                      |                                                       |
| Theme: Welcome at ITA / Competing at the IOAA |                                                                                                                      |                                                       |
| 10:00 – 10:30<br>Peisestua (304)              | Welcome message /<br>Training week and IOAA: overview                                                                | Institute director Luc Rouppe +<br>Astro-OL committee |
| 10:30 – 11:45<br>Peisestua (304)              | Introduction to Cosmology: Part I                                                                                    | Prof. David Mota (ITA)                                |
| 11:45 – 12:30                                 | Lunch break - RoCS basement, outside rooms K08-K09                                                                   |                                                       |
| 12:30 – 14:20<br>RoCS K08-K09                 | Training session: Orbital<br>Mechanics                                                                               | Herman Sletmoen (ITA)<br>Abdolali Banihashemi (ITA)   |
| 14:20 – 14:30                                 | 10 min break (cookies and fruit right outside the room)                                                              |                                                       |
| 14:30 – 15:20<br>RoCS K08-K09                 | Galaxies: The Beautiful Diversity<br>and Complexity of the Universe                                                  | Prof. Sijing Shen (ITA)                               |
| 15:20 – 15:30                                 | 10 min break                                                                                                         |                                                       |
| 15:30 – 17:00<br>RoCS K08-K09                 | Training session: Galaxies                                                                                           | Akhil Lasrado (ITA)<br>Bendix Hagedoorn (ITA)         |
| 16:30 – 17:00 (Check<br>in at the hotel)      | Those students arriving on Monday and staying at the hotel, will<br>leave the training session earlier for check in. |                                                       |
| 17:30 – 19:00<br>19:00 – 20:00                | Dinner at <a href="#">Peppes pizza at Solli Plass</a> + <a href="#">SolliBowling</a>                                 |                                                       |
| Tuesday 18/3 Svein Rosselands hus             |                                                                                                                      |                                                       |
| Theme: Observational Astrophysics             |                                                                                                                      |                                                       |
| 09:00 – 10:00<br>RoCS K08-K09                 | Celestial Coordinates                                                                                                | Researcher Håkon Dahle (ITA)                          |
| 10:00 – 10:10                                 | 10 min break                                                                                                         |                                                       |
| 10:10 – 12:00                                 | Photometry, Variable stars, Sky<br>nomenclature, Distance<br>measurements, Gravitational<br>lensing                  | Researcher Håkon Dahle                                |
| 12:00 – 12:45<br>RoCS K08-K09                 | Lunch break - RoCS basement, outside rooms K08-K09                                                                   |                                                       |
| 12:45 – 14:15<br>RoCS K08-K09                 | Telescopes and the sky                                                                                               | PhD Nils-Ole Stutzer (ITA)                            |
| 14:30                                         | We leave for the <a href="#">University's Astronomical Observatory</a>                                               |                                                       |

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|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| 15:00 – 16:00                                       | Visit of the University's Astronomical Observatory                                                                                                       |                                                                                                                |
| 17:00 – 18:00                                       | <i>Dinner at Tacoteket, Blindern Campus</i>                                                                                                              |                                                                                                                |
| 18:15 – 19:30<br>RoCS K08-K09                       | Telescopes indoor training                                                                                                                               | PhD Aditi Bhatnagar (RoCS, ITA)<br>PhD Nils-Ole Stutzer (ITA)<br><a href="#">Universum Panton</a>              |
| 19:30 – 21:30 circa<br>Outdoor                      | Observing program: ~4-5 groups circulate between 4-5 telescopes and Naked-eye observations: learning the sky<br>DSLR astrophotography through telescopes | Håkon Dahle (ITA)<br>Aditi Bhatnagar (RoCS, ITA)<br>Nils-Ole Stutzer (ITA)<br><a href="#">Universum Panton</a> |
| <b>Wednesday 19/3 Svein Rosselands hus</b>          |                                                                                                                                                          |                                                                                                                |
| <b>Theme: The Universe</b>                          |                                                                                                                                                          |                                                                                                                |
| 09:00 – 10:00<br>Auditoriet 209                     | Introduction to Cosmology: Part II                                                                                                                       | Prof. David Mota (ITA)                                                                                         |
| 10:00 – 10:10                                       | <i>10 min break</i>                                                                                                                                      |                                                                                                                |
| 10:10 – 11:00<br>Auditoriet 209                     | Introduction to Cosmology: Part III                                                                                                                      | Prof. David Mota (ITA)                                                                                         |
| 11:00 – 11:10                                       | <i>10 min break</i>                                                                                                                                      |                                                                                                                |
| 11:10 – 11:45<br>Auditoriet 209                     | The cosmic microwave background radiation                                                                                                                | PhD Jonas Lunde (ITA)                                                                                          |
| 11:45 – 12:30                                       | <i>Lunch break in the basement</i>                                                                                                                       |                                                                                                                |
| 12:30 – 14:00<br>RoCS K09                           | Training session: cosmology                                                                                                                              | Ana Martins (ITA)<br>Dennis Fremstad (ITA)                                                                     |
| 14:00 – 14:15                                       | <i>15 min break</i>                                                                                                                                      |                                                                                                                |
| 14:15 – 16:00<br>RoCS K09                           | Exercises from AST2000 - Introduction to astrophysics                                                                                                    | Prof. Frode Hansen (ITA)                                                                                       |
| 16:00 – 16:10                                       | <i>10 min break</i>                                                                                                                                      |                                                                                                                |
| 16:10 – 17:30<br>RoCS K08-K09                       | Training session: cosmology                                                                                                                              | Herman Sletmoen (ITA)<br>Dennis Fremstad (ITA)                                                                 |
| 18:00 – 20:00 circa<br><i>Vilhelm Bjerknes' hus</i> | <i>Social event organised by the faculty of Mathematics and Natural Sciences (MatNat) at UiO</i>                                                         |                                                                                                                |

| Thursday 20/3 Svein Rosselands hus     |                                                                    |                                                                                             |
|----------------------------------------|--------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| Theme: Solar and Stellar Physics       |                                                                    |                                                                                             |
| 09:00 – 10:50<br>Auditoriet 209        | Solar/stellar structure and stellar evolution                      | Prof. Sven Wedemeyer (RoCS, ITA)                                                            |
| 10:50 – 11:00                          | 10 min break                                                       |                                                                                             |
| 11:00 – 12:15<br>Auditoriet 209        | Photometry /HR diagram                                             | Prof. Tiago Pereira (RoCS, ITA)                                                             |
| 12:15 – 13:00                          | Lunch break in the basement                                        |                                                                                             |
| 13:00 – 14:00<br>RoCS K08-K09          | Stellar Classes /Spectra lines                                     | Prof. Tiago Pereira (RoCS, ITA)                                                             |
| 14:00 – 15:00<br>RoCS K08-K09          | Training session                                                   | Aditi Bhatnagar (RoCS, ITA)<br>Mats Kirkaune (RoCS, ITA)                                    |
| 15:00 – 15:10                          | 10 min break                                                       |                                                                                             |
| 15:10 – 16:00<br>RoCS K08-K09          | Exoplanets workshop                                                | Konstantin Herbst (PHAB, Geo)<br>Mats Ola Sand (RoCS, ITA)<br>Eilif Sommer Øyre (RoCS, ITA) |
| 16:00 – 17:15<br>RoCS K08-K09          | Training session                                                   | Aditi Bhatnagar (RoCS, ITA)<br>Mats Kirkaune (RoCS, ITA)                                    |
| 17:30 – 18:30                          | Dinner <a href="#">SiO Frederikke spiseri</a> (Blindern Campus)    |                                                                                             |
| Friday 21/3 Svein Rosselands hus       |                                                                    |                                                                                             |
| 09:00 – 11:30<br>RoCS K08-K09          | Final Round                                                        | Herman Sletmoen<br>Martina D'Angelo                                                         |
| 11:45 – 12:45                          | Lunch break + photo session                                        |                                                                                             |
| 12:45 – 13:30<br>RoCS K08-K09          | Summary and final remarks / End of the training week               | Martina D'Angelo (Astro-OL committee)                                                       |
| 13:30 – 14:00<br>RoCS K08-K09          | Practical things: filling in the claim form                        | Ida Emilie Moe (ITA Admin.)                                                                 |
| 14:30 – 15:30<br>Vilhelm Bjerknes' hus | Realfag-OL: Closing Ceremony /premiation with cake, tea and coffee |                                                                                             |