

Between Models and Reality: School on Machine Learning in Physics



Report of Contributions

Contribution ID: 1

Type: **not specified**

Arrival, Breakfast, Registration

Monday 2 June 2025 08:30 (1 hour)

Presenter: PETERSEN, Troels (Niels Bohr Institute)

Contribution ID: 2

Type: **not specified**

Scope of School and Lecture 1: Introduction and overview of Machine Learning

Monday 2 June 2025 09:30 (1h 15m)

Presenter: PETERSEN, Troels (Niels Bohr Institute)

Contribution ID: 3

Type: **not specified**

Lecture 2: Basics of Machine Learning & Fast Data Loaders

Monday 2 June 2025 11:00 (1h 15m)

Presenters: TIMIRYASOV, Inar (NBI); PETERSEN, Troels (Niels Bohr Institute)

Contribution ID: 4

Type: **not specified**

Discussion of Lectures and Introduction to exercises

Monday 2 June 2025 13:15 (45 minutes)

Presenter: MURNANE, Daniel (Niels Bohr Institute, University of Copenhagen)

Contribution ID: 5

Type: **not specified**

Work on exercises

Monday 2 June 2025 14:00 (30 minutes)

Presenters: MURNANE, Daniel (Niels Bohr Institute, University of Copenhagen); ØRSØE, Rasmus (TUM); PETERSEN, Troels (Niels Bohr Institute)

Contribution ID: 6

Type: **not specified**

Work on exercises

Monday 2 June 2025 15:00 (1h 30m)

Presenters: MURNANE, Daniel (Niels Bohr Institute, University of Copenhagen); ØRSØE, Rasmus (TUM); PETERSEN, Troels (Niels Bohr Institute)

Contribution ID: 7

Type: **not specified**

Lecture 3: Networks with Learned Uncertainties

Tuesday 3 June 2025 09:00 (1h 15m)

All my lectures will be on the blackboard, based on the published Heidelberg lecture notes. Tutorials maintained by the Heidelberg group are linked in the lecture notes.

Presenter: PLEHN, Tilman (Heidelberg University)

Contribution ID: **8**

Type: **not specified**

Lecture 4: Generative Networks and Classifier Tests

Tuesday 3 June 2025 10:45 (1h 15m)

Presenter: PLEHN, Tilman (Heidelberg University)

Contribution ID: 9

Type: **not specified**

Discussion of Lectures and intro to exercises

Tuesday 3 June 2025 13:00 (30 minutes)

Contribution ID: **10**

Type: **not specified**

Work on exercises

Tuesday 3 June 2025 13:30 (1 hour)

Contribution ID: **11**

Type: **not specified**

Work on exercises

Tuesday 3 June 2025 15:00 (1h 30m)

Contribution ID: **12**

Type: **not specified**

Lecture 5: Modern Generative Networks

Wednesday 4 June 2025 09:00 (1h 15m)

Presenter: PLEHN, Tilman (Heidelberg University)

Lecture 6: Probabilistic regression with generative models

Wednesday 4 June 2025 10:45 (1h 15m)

Presenter: ALGREN, Malte

Discussion of Lectures and intro to exercises

Wednesday 4 June 2025 13:00 (30 minutes)

Contribution ID: 15

Type: **not specified**

Work on exercises

Wednesday 4 June 2025 13:30 (1 hour)

Contribution ID: **16**

Type: **not specified**

Train ride to Helsingør, visit to Kronborg Castle, drinks on the ramparts, and dinner at Værftets Madmarket.

Wednesday 4 June 2025 15:30 (6h 30m)

Contribution ID: **17**

Type: **not specified**

Lecture 7: Anomaly Detection

Thursday 5 June 2025 09:00 (1h 15m)

Presenter: AARRESTAD, Thea (ETH Zurich)

Contribution ID: **18**

Type: **not specified**

Lecture 8: Network optimisation and fast inference

Thursday 5 June 2025 10:45 (1h 15m)

Presenter: AARRESTAD, Thea (ETH Zurich)

Contribution ID: **19**

Type: **not specified**

Lunch Break

Contribution ID: **20**

Type: **not specified**

Work on exercises and own projects

Thursday 5 June 2025 13:00 (1h 30m)

Contribution ID: **21**

Type: **not specified**

Work on exercises and own projects

Thursday 5 June 2025 15:00 (2 hours)

Lecture 9: Transformers and Foundation Models

Friday 6 June 2025 09:00 (1h 15m)

Presenter: ALGREN, Malte

Lecture 10: Domain shifts and Past experiences

Friday 6 June 2025 10:45 (1h 15m)

Presenter: PETERSEN, Troels (Niels Bohr Institute)

Contribution ID: 24

Type: **not specified**

Discussion of Lectures

Friday 6 June 2025 13:00 (30 minutes)

Contribution ID: **25**

Type: **not specified**

Presentation of projects over drinks and snacks

Friday 6 June 2025 14:30 (1h 30m)

Contribution ID: **26**

Type: **not specified**

Poster session with snacks and drinks

Contribution ID: 27

Type: **not specified**

Exchange of experiences, resources, and "tricks"

Friday 6 June 2025 13:30 (1 hour)