



Seminar: Topics in Philosophy of Physics

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Spring 2023

Website: http://wuthrich.net/teaching/_USI_PhilPhysSem_2023.html

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The philosophy of physics deals with methodological, epistemological, and metaphysical issues in physics. This seminar addresses topics in the philosophy of space and time as they relate to physics, the philosophical implications of quantum physics, the physical origin of the direction of time, or issues in the philosophy of cosmology and the philosophy of quantum gravity.

For the spring semester 2023, the topics are (1) metaphysics, philosophy of mind, and physics, (2) naturalistic challenges to accounts of laws of nature and modality, and (3) the philosophy of black holes.

The readings are available at icorsi at <https://www.icorsi.ch/course/view.php?id=15777>.

Prerequisites. Participants should have successfully completed the course *Introduction to Philosophy of Physics*, or be similarly prepared.

Course requirements and evaluation

My expectation is that everyone prepares the assigned readings ahead of time, actively participates in the seminar, and accepts a reasonable share of presentation duties. As this is a seminar rather than a lecture course, the grade will be determined by the points obtained from the following type of evaluation:

1. *Seminar presentation(s)* (8 points): Each participant will give at least one seminar presentation (see below).
2. *Seminar participation* (2 points): For each topic, every participant is to send me by email one (or two) discussion questions (no more than a paragraph) on any one of the four papers of the corresponding topic by Sunday midnight before we discuss the topic (i.e., by 16 April, 23 April, and 7 May), for a credit of up to half a point per topic. The remaining half point for participation will be given based on class participation.

Seminar presentations

I expect everyone to do (at least) one presentation on one of the assigned readings. When it is your turn, please keep the following points in mind:

- While you will be the leader for the entire half-seminar on this day, including the discussion, the initial presentation should last (if given in one piece) no more than 40 to 45 minutes.
- It is important to stick to the main points, the author's main thesis and their main argument, rather than to give a complete or chronological list of points raised in the article.
- I encourage you to use some visual complement (blackboard, powerpoint slides, hand-out), and to see this seminar as an opportunity to get some experience with this.
- Make sure to read the article sufficiently ahead of time, so that we have time to make an appointment if you want to meet and discuss it before your presentation.
- Do not stress out if there is something in the article you do not understand after having made an effort to grasp it. In this case, try to articulate precisely what it is that you don't understand—and it may well become the topic of our seminar discussion.
- In this sense, it is not the job of the presenter to offer a conclusive analysis of a paper; rather, it is to prepare the ground for our discussion.
- You should, however, raise at least some critical points to be discussed.

Tentative schedule

The readings must be read in advance of the seminar; an asterisk indicates background reading.

Introduction, the challenge from scientism

Tuesday, 28 March 2023, 9:30-13:00

- Don Ross, James Ladyman, and David Spurrett. In defence of scientism. In James Ladyman and Don Ross, *Every Thing Must Go*. Oxford University Press, 2007, §1.1, §1.2, §1.3, §1.4.
- Kerry McKenzie. Science-guided metaphysics. In Ricki Bliss and J T M Miller (eds.), *The Routledge Handbook to Metametaphysics*. Routledge (2021), 435-446

1 Metaphysics, philosophy of mind, and physics

Monday, 17 April 2023, 13:30-17:00

- L A Paul. Metaphysics as modeling: the handmaiden's tale. *Synthese* **160** (2012): 1-29.
- Amanda Bryant. Keep the chickens cooped: the epistemic inadequacy of free range metaphysics. *Synthese* **197** (2020): 1867-1887.

Tuesday, 18 April 2023, 09:30-13:00

- Robert Weingard. Relativity and the spatiality of mental events. *Philosophical Studies* **31** (1977): 279-284.
- Jenann Ismael. Why physics should care about the mind, and how to think about it without worrying about the mind-body problem. In Shan Gao (ed.), *Consciousness and Quantum Mechanics*. Oxford University Press (2022), 156-176.

2 Naturalistic challenges to accounts of laws of nature and modality

Monday, 24 April 2023, 13:30-17:00

- Tim Maudlin. *The Metaphysics Within Physics*. Oxford University Press (2007), chapter 2 ('Why be Humean?'), 50-77.
- George Darby. Entanglement and the metaphysician on the Clapham omnibus. *Topoi* **34** (2015): 387-396.

Tuesday, 25 April 2023, 09:30-13:00

- Mauro Dorato and Michael Esfeld. The metaphysics of laws: dispositionalism vs primitivism. In Tomasz Bigaj and Christian Wüthrich (eds.), *Metaphysics in Contemporary Physics*. Brill (2015), 403-424.
- Christian Wüthrich. When the actual world is not even possible. In George Darby, David Glick, and Anna Marmodoro (eds.), *The Foundation of Reality: Fundamentality, Space and Time*. Oxford University Press (2020), 233-253.

3 Philosophy of black holes

Monday, 8 May 2023, 13:30-17:00

- *Erik Curiel. The many definitions of a black hole. *Nature Astronomy* **3** (2019): 27-34.
- Gustavo E Romero and Daniela Pérez. Presentism meets black holes. *European Journal of Philosophy of Science* **4** (2014): 293-308.
- Geurt Sengers. Presentism and black holes. *European Journal of Philosophy of Science* **7** (2017): 1-15.

Tuesday, 8 May 2023, 09:30-13:00

- Sam Baron and Baptiste Le Bihan. Trouble on the horizon for presentism. Forthcoming in *Philosophers' Imprint*.
- Rawad El Skaf and Patricia Palacios. What can we learn (and not learn) from thought experiments in black hole thermodynamics?. *Synthese* **200** (2022): 434.