

Prof Christian Wüthrich (christian.wuthrich@unige.ch)

Département de philosophie
Université de Genève

Philosophy of Physics: The Nature of Contingency

SE2, A, Je 16-18, B111
Modules: MA6, MA7, MA8

http://wuthrich.net/teaching/_MA6_PhilPhys_2020.html

Primary reading: Alastair Wilson (2020). *The Nature of Contingency: Quantum Physics as Modal Realism*. Oxford University Press.

All other readings will be made available on moodle.unige.ch (ID 2422).

- 24.09. Introduction to the seminar and the topic (CW)
*Wilson, Ch. 0.
- 01.10. The Everett interpretation
David Wallace (2012). *The Emergent Multiverse*. Ch.2, pp. 46-63.
*David Wallace (2008). The Everett interpretation. In Dean Rickles (ed.), *The Ashgate Companion to Contemporary Philosophy of Physics*. §2.4, pp. 39-52.
- 08.10. Guest seminar: Louis Vervoort (Tyumen), *The hypothesis of "hidden variables" as a unifying principle in physics*.
- 15.10. Analysing modality
Wilson, Ch. 1, §§1.1-1.3, pp. 22-50.
- 22.10. Wilson, Ch. 1, §§1.4-1.9, pp. 50-73.
- 29.10. Diverging Everettian quantum mechanics
Wilson, Ch. 2, pp. 74-97.
- 05.11. *No seminar* (semaine de lecture)
- 12.11. Guest seminar: Erik Curiel (LMU Munich), *Title TBD*.
- 19.11. Emergent chance
Wilson, Ch. 3, §§3.1-3.5, pp. 98-119.
- 26.11. Wilson, Ch. 3, §§3.6-3.9. pp. 119-144.
- 03.12. Laws of nature
Wilson, Ch. 4, pp. 145-171.
- 10.12. Indeterminacy
Wilson, Ch. 5, pp. 172-184.
- 17.12. Guest seminar: Al Wilson (University of Birmingham), *Anthropic contingency*.
Wilson, Ch. 6 and Conclusion, pp. 185-199.

Readings marked with an asterisk (*) are not mandatory.

Course description

The philosophy of physics deals with methodological, epistemological, and metaphysical issues in physics. This seminar has the dual purpose of systematically introducing the background necessary to do research in philosophy of physics as well as discussing current research in the field.

The focus of the seminar this semester will be on the metaphysics of quantum physics. We will read and discuss Alastair Wilson's new book on the nature of contingency. This book defends a novel theory of modality drawing on the many-worlds approach to quantum theory. Its central thesis is that this approach to quantum theory, which will be duly introduced, delivers a space of genuine possibilities and thus provides the resources for a new systematic framework for the metaphysics of modality. The regular seminar will be interspersed with talks by leading experts on their current research in the philosophy of physics.

While some background in physics, mathematics, and philosophy will be helpful, we will not assume any specific knowledge beyond high school mathematics.

This seminar will be in English.

Course requirements

For credit in philosophy:

- *MA6*: travail écrit de recherche avec soutenance (env. 25 pages, 50'000 signes)
- *MA8 (demi-module)*: travail écrit de recherche (env. 12 pages, 24'000 signes) ou présentation orale durant le séminaire

Contact me if you need credit in physics or in another programme.

My expectation is that everyone prepares the assigned readings ahead of time, actively participates in the seminar (including those featuring a guest speaker), and accepts a reasonable share of presentation duties.

Seminar presentations

I expect everyone to do a brief 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 seminar on this day, including the discussion, the initial presentation should last (if given in one piece) about 15 to 20 minutes.
- Therefore, 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, handout), and to see this seminar as an opportunity to experiment with a format you have not yet tried.
- 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.
- Don't stress out if there is something in the article you don't 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.