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The Standard Model in Physics from CERN

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Standard Model Equation

See [HTML lecture slides](#), if interested. You won't be tested on it, however.

What is Science?

- Seeks to understand, explain, and predict
- A distinguishing feature of science is its methods. E.g.,
 - Experiments
 - Observations
 - Theory construction

Science & Non-Science

- No clear-cut criteria demarcating science from non-science exist
- Karl Popper argued that the defining feature of scientific theories is that they are falsifiable
- To be falsifiable, a theory must make non-vague predictions that can be tested
- A theory that makes predictions that are compatible with any state of affairs—or too broad a range—is not scientific
- The theory must rule things out
- A theory that makes no predictions—such as certain models of the multiverse—is not properly scientific.

Ordering of Sciences

- Auguste Comte (1798-1857) ordered sciences from the general to the particular, from the simple to the complex. His list was:
 - Math → Astronomy → Physics → Chemistry → Biology → Sociology

