Institut de Physique Théorique
Theoretical physics courses

Symmetry and topology in QFT for pedestrians

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May 5th, 12th, 19th, 26th 14:15–16:30; May 23rd 10:00–12:30.
In person at IPhT and live online.

In the last decade, the concept of symmetry in quantum field theory has been vastly generalized, to so-called higher-form symmetries, and, more broadly, categorical symmetries, which can sometimes be non-invertible. If these statements sound weird to you, this lecture series is aimed at you.

I will introduce these generalized symmetries using the viewpoint of gauge (Maxwell and Yang-Mills) theories and anomalies, which both motivate the introduction of the new concepts and illustrate them.

Topics covered:

- Charge conservation and global symmetries in Maxwell theory
- Line operators and global forms of Yang-Mills theories
- Anomalies and higher-group symmetries
- Self-dual Yang-Mills theories and non-invertible symmetries
- Higher categories as the framework for describing symmetries

To receive the latest news on this course and the video-conference links, please subscribe to its newsletter, as explained at the website `courses.ipht.fr`. An open, non-interactive livestream will also be available at `youtube.com/ipht-tv`.