

MANY CHEERFUL FACTS

presents

The Tao of Quantization

a talk by Santiago Cañez

13:10 – 14:00 on Thursday, November 1, in room 1015.

Quantum mechanics is (roughly) the physics you get when you replace manifolds by vector spaces and functions by operators. This passage from the classical world to the quantum world is known as “quantization”. In the last 80 or so years, many mathematical attempts which try to explain some of the voodoo involved in quantum mechanical constructions have arisen — each with its own benefits and drawbacks. I will give a rough introduction to some of the ideas involved, and some of the questions that come up. Being a geometer, I will have geometric quantization in mind as a main example of a quantization scheme, but will mention others as well. I will only assume basic knowledge of linear algebra, manifolds, and categories, although the terms “symplectic”, “Poisson”, and “Hilbert” may pop up from time to time.

*I am the very model of a modern Major General,
I've information vegetable, animal, and mineral,
I know the kings of England, and I quote the fights historical
From Marathon to Waterloo, in order categorical;
I'm very well acquainted, too, with matters mathematical,
I understand equations, both the simple and quadratical,
About binomial theorem I'm teeming with a lot o' news,
With many cheerful facts about the square of the hypotenuse!*

- Gilbert & Sullivan $P \circ P$

The website for Many Cheerful Facts is
<http://www.math.berkeley.edu/~mcf>