MANY CHEERFUL FACTS

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The Coming Constructive Revolution

a talk by Russell O'Connor

12:10 – 1:00pm on Wednesday, March 21, in room 1015.

During a dinner at a recent MAP (Mathematics, Algorithms and Proofs) summer school, some of the participants remarked that in 50 years constructive mathematics will be the norm. In order to prepare for the coming constructive revolution, I will give a short introduction to constructive logic and constructive mathematics.

Constructive logic is an extension of classical logic. It extends classical logic by introducing the constructive disjunction and constructive existential quantifier. Deductions in constructive logic have a computational interpretation. This is the primary motivation for using constructive logic. I will introduce constructive logic and its computational interpretation.

Constructive mathematics is mathematics done using constructive logic. Constructive mathematics is not as well developed as classical mathematics. It is challenging to redevelop mathematics while still preserving the computational interpretation of the logic. I will touch on some of the approaches to constructive algebra, constructive analysis, and constructive topology.

Russell O'Connor is a former PhD candidate in the Logic and Methodology of Science group at Berkeley. He is now a PhD candidate in the Foundations Group at Radboud University in the Netherlands.

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/∼slofstra/mcf