

Category Theory Seminar

The Graduate Center of The City University of New York
365 Fifth Avenue (at 34th Street)
(Diagonally across from the Empire State Building)
New York, NY 10016-4309

Andre Rodin

University Paris-Diderot

Why Category Theory Is “Unreasonably Effective”?

Wednesday, November 9, 2011

6:00 - 7:00 PM., Room 4421

Abstract: In the first part of my talk I briefly present a neo-Kantian view on mathematics and its relationships with natural sciences, according to which the primary task of doing mathematics is not establishing certain truths as such but making coherent conceptual constructions playing a crucial role in the exploration of our environments that we call (experimental) science. The notion of mathematical (“a priori”) truth serves this latter purpose: remind Vladimir Arnold’s provocative motto “Mathematics is a part of Physics”. Making explicit the way, in which pure mathematics is deeply involved into sciences, dissolves Wiegner’s puzzle about the “unreasonable effectiveness” of mathematics in these sciences. The effectiveness of mathematics is not unreasonable because the same human reason operates in all these disciplines.

In the second part of my talk I take the case of Category theory and try to show why this particular mathematical theory is and should be “unreasonably effective” in a sense in which Set theory is not. Here I analyze the mathematical notion of *map* (which I assume to be central for Category theory) through its history, demonstrate its epistemic significance, and consider its role in the modern science. In this context I compare geometrical groups with more general geometrical categories and discuss some epistemic aspects of such a generalization.