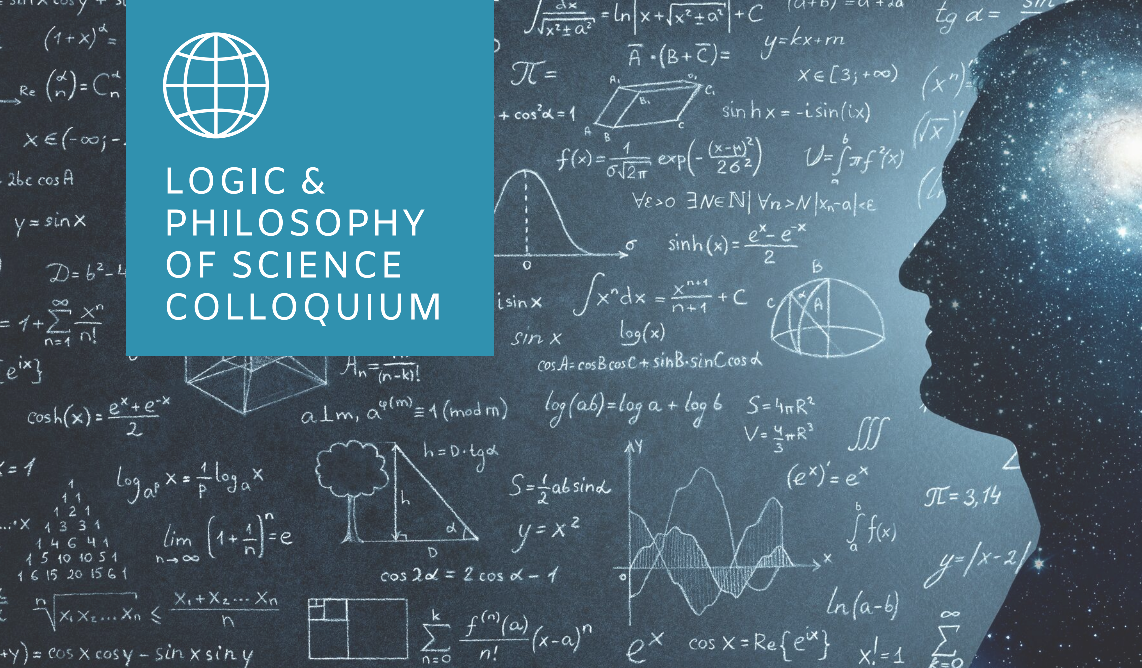

LOGIC & PHILOSOPHY OF SCIENCE COLLOQUIUM

Edward Zalta

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"CONVERGENCE IN THE PHILOSOPHY OF MATHEMATICS"

If we put aside views that attempt to reform mathematical practice (Intuitionism, Constructivism, and Finitism), then there are quite a number of disparate approaches to the philosophy of mathematics, including Platonism (Plato, Gödel), Logicism (Frege, Russell), Structuralism (Dedekind, Benacerraf), Inferentialism (Wittgenstein), If-Thenism (Putnam, Hellman), Formalism (Hilbert, Curry), Naturalism (Quine, Maddy), Fictionalism (Field), and Carnapianism. In this talk, I show how one can unify these various philosophies: the essential idea of each is captured by a different interpretation of a single formalism. The formalism, object theory, is an axiomatic theory of abstract objects and abstract relations. Its foundations do not assume any mathematics. Nevertheless, for an arbitrary mathematical theory T, object theory offers formally-precise theoretical descriptions that identify the denotations of the terms and predicates of T, and allows us to formulate precise truth conditions for the theorems of T. Object theory is first formulated in second-order quantified modal logic, and then generalized in relational type theory. During the talk, I offer an explanation of why some philosophers of mathematics can't even agree on the data to be explained, e.g., why Platonists think the statements of mathematics are true, fictionalists think they are false, and formalists think that they are just part of a game played with symbols and not even truth-apt.

November 11th | 3-5 pm | SST 777