

Meeting: 1003, Atlanta, Georgia, POMSIGMAA, SIGMAA on the Philosophy of Mathematics Business Meeting and Reception

1003-A0-1494 **Jonathan Borwein***, Dalhousie University. *Philosophical implications of experimental mathematics.*

Philosophers have frequently distinguished mathematics from the physical sciences. While the sciences were constrained to fit themselves via experimentation to the ‘real’ world, mathematicians were allowed more or less free reign within the abstract world of the mind. This picture has served mathematicians well for the past few millennia but the computer has begun to change this. The computer has given us the ability to look at new and unimaginably vast worlds. It has created mathematical worlds that would have remained inaccessible to the unaided human mind, but this access has come at a price. Many of these worlds, at present, can only be known experimentally. Work in experimental mathematics challenges the standard view of mathematics as a subject in which proof is the sole pathway to knowledge. (Received Oct. 5, 2004)