



Invitation

Logic Colloquium

Joel Hamkins

(University of Oxford)

*Naturality in mathematics and
the hierarchy of consistency strength*

the talk will take place online
on **Monday, 19.07.2021** at **15:15**

<https://zoom.us/j/99574716128?pwd=Mys3bGRpQUdwbERZc3A1Q1htVUNnUT09>

All interested are welcome to attend

Abstract: An enduring mystery in the foundations of mathematics is the observed phenomenon that our best and strongest mathematical theories seem to be linearly ordered and indeed well-ordered by consistency strength. For any two of the familiar large cardinal hypotheses, one of them generally proves the consistency of the other. Why should this be? Why should it be linear? Some philosophers see the phenomenon as significant for the philosophy of mathematics; it points us toward an ultimate mathematical truth. Meanwhile, the linearity phenomenon is not strictly true as mathematical fact, for we can prove that the hierarchy of consistency strength is actually ill-founded, densely ordered, and nonlinear. The counterexample statements and theories, however, are often dismissed as unnatural. Linearity is thus a phenomenon only for the so-called "naturally occurring" theories. But what counts as natural? Is there a mathematically meaningful account of naturality? In this talk, I shall criticize this notion of naturality, and attempt to undermine the linearity phenomenon by presenting a variety of natural hypotheses that reveal ill-foundedness, density, and incomparability in the hierarchy of consistency strength.

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