## 1150-03-178 **Geoffrey Hellman\***, hellm001@umn.edu. Modal-Structural Mathematics and a Height-Potentialist View of Set Theory.

In this talk, we first summarize the key ideas of modal-structural interpretations of mathematical theories, emphasizing the Hilbert-Dedekind view of axioms as structural defining conditions rather than as assertions, and deploying modality to express what would hold among any objects there might be satisfying relevant axioms. Then we turn to a second use of modal logic, to avoid commitments to absolutely maximal totalities of sets, ordinals, etc., in favor of indefinite extendability of domains of sets, refining insights of Zermelo [1930] and Putnam [1967]. Finally, we describe two advantageous applications of these ideas, first to give improved derivations of key set-theoretic axioms, Infinity and Replacement; and second, to provide especially attractive resolutions of the set-theoretic paradoxes, Burali-Forti, Russell, and Cantor. (Received July 08, 2019)