Abstract for talk "On higher meta-algebra"
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In various subjects including mathematics, one can hope to use mathematical thinking well when the right kinds of algebraic structure to consider can be discovered or spotted. Therefore, it would help to understand kinds of algebraic structure in some great generality. In tradition, certain general kinds of algebraic structure are studied through the theory of operads, of algebraic theories, of properads (possibly with "colours" or "sorts") or of the like. We understand this as use of algebra for studying a certain meta aspect of the subject of algebra, namely, studying kinds of algebraic structure in general (rather than structures of specific kinds themselves).

In higher categorical contexts, more various algebraic structures can be considered (starting in fact with operads considered with arbitrarily varying colours) than can be covered with mere higher categorified versions of the traditional tools. In this talk, we develop a systematic view on quite general algebraic structures with high categorical dimensionality. We do this by extending algebra for the meta aspect of algebra, to a higher order, or highly meta, theory of algebra, where the theoretic order turns out to match the categorical dimension. We will discuss some examples including a natural generalization of the notion of topological field theory (TFT) obtained in the resulting new system. It turns out a generalized TFT can have a very different characterization from a conventional TFT does.