

Discreteness and completeness conditions for (∞, n) -categories

Julie Bergner¹

University of Virginia
jeb2md@virginia.edu

When modifying Segal spaces to get models for $(\infty, 1)$ -categories, one has to make a choice for how to encode that that we want to consider enriched, rather than internal, categories: we can either ask that the objects be discrete, or that we have an additional completeness condition. In the first case, we obtain the Segal category model, and in the second, we get the complete Segal space model. Most generalizations of these approaches to higher (∞, n) -categories have focused more on the completeness condition, for example in the Θ_n -space and n -fold complete Segal space models. However, there are corresponding models using discreteness conditions, and one can even form hybrid models, with objects and morphisms discrete up to some dimension k , and morphisms satisfying completeness for dimensions up to n . In this talk we'll review the two models in the $n = 1$ case and their comparison, then discuss some of the many ways they can be generalized for higher n .