

HIGHER HOMOTOPY CATEGORIES AND BROWN REPRESENTABILITY

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Brown's famous representability theorem gives necessary and sufficient conditions for the representability of contravariant set-valued functors defined on the homotopy category of based connected CW-complexes. This theorem has been generalized in many directions, most notably, in the context of triangulated categories. Such representability theorems are also closely connected with adjoint functor theorems (AFTs). Unlike other standard AFTs, these apply to categories which do not necessarily admit all (co)limits. In this talk, we will discuss how to bridge the gap between classical Brown representability and the different AFTs by considering higher homotopy categories and their special properties and proving a Brown representability theorem for suitable $(n,1)$ -categories. If time permits, other related extensions of classical AFTs to $(n,1)$ -categories will also be discussed. (Based on joint work with H. K. Nguyen and C. Schrade.)