

Homotopical recognition of diagram categories

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Abstract.

Building on work of Marta Bunge in the one-categorical case, we characterize when a given model category is Quillen equivalent to a presheaf category with the projective model structure. This involves introducing a notion of *homotopy atoms*, generalizing the orbits of Dwyer and Kan, [2].

As an application, we give a classification of polynomial functors (in the sense of Goodwillie calculus, [3]) from finite pointed simplicial sets to spectra, and compare it to the previous work by Arone and Ching, [1]. Since the answer is a category of simplicial functors taking values in the simplicial category of spectra, we have to adapt the concept of homotopy atoms and present it as a Kelly product of two categories satisfying part of the properties.

References

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