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# 1 Spectral Categories

## Summary

### Important definitions

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### Notation

- $Cat_S$  is the category of small spectral categories and spectral functors.
- $Cat_T$  is the category of small simplicial categories and simplicial functors.

### Key results

1. There's a Quillen adjunction

$$Cat_S \xrightleftharpoons[\Omega^\infty]{\Sigma_+^\infty} Cat_T$$

where  $\Omega^\infty(F(A, B))$  is the zeroth space functor or equivalently the simplicial set  $[n] \mapsto Hom_{Spt}(\mathbb{S} \otimes \Delta^n, F(A, B)) \cong Hom_{Spc}(\Delta^n, \Omega^\infty F(A, B)) \cong \Omega^\infty F(A, B)_n$ .