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## **Coherence of periodic homotopy idempotents and applications**

A self-map  $f$  on the CW complex  $Z$  is a periodic homotopy idempotent if an iterate of  $f$  is homotopic to a later iterate. A particular homotopy between iterates of  $f$  is called coherent if it commutes with  $f$  up to homotopy. These notions were defined by Geoghegan and Nicas in relation to the computation of their first order Euler characteristic on mapping tori.

Solutions to some problems regarding the relation between the “homotopy period” of  $f$  and “rotation period” of  $f$  will be presented. A new invariant of a periodic homotopy idempotent, called “rotation stabilization index”, will be discussed. Applications to the first order Euler characteristic of mapping tori (in particular, aspherical) and group theory will be given, sharpening and generalizing results of Geoghegan and Nicas.