

A characterization of the unique path lifting property for the whisker topology

Jeremy Brazas

Georgia State University, USA
jbrazas@gsu.edu

Session: 37. Wild algebraic and geometric topology

The obstruction to the existence of various notions of “generalized covering map” is almost always the unique path lifting property. The topology of a generalized covering space defined in terms of unique lifting properties with respect to locally path-connected spaces (specifically, in the sense of Fischer-Zastrow) must agree with the standard “whisker topology” used in classical covering space theory. For a path-connected metric space X , we characterize the unique path lifting property for the whisker topology (equivalently, the existence of a generalized covering) relative to an arbitrary subgroup H of the fundamental group. Our characterization is given in terms of a closure-like property of H that involves test maps from a certain “dyadic” one-dimensional Peano continuum. The simple nature of this closure-like property sheds light on the difference between the unique path lifting property, homotopy path-Hausdorff property, and a number of other properties of recent interest.