Meeting: 999, Nashville, Tennessee, SS 5A, Special Session on Topological Aspects of Group Theory

999-57-211 **Craig R Guilbault*** (craigg@uwm.edu), Department of Mathematical Sciences, University of Wisconsin-Milwaukee, Milwaukee, WI 53132. *Z-compactifications and Generalized Group Boundaries.* Preliminary report.

A closed subset A of a compact ANR X is a $\mathcal{Z}$*-set* if either of the following equivalent conditions is satisfied:

- There is a homotopy $H : X \times I \to X$ with $H_0 = id_X$ and $H_t(X) \cap A = \emptyset$ for all $t > 0$.
- For every open set U of X, $U \backslash A \hookrightarrow U$ is a homotopy equivalence.

A $\mathcal{Z}$*-compactification* of a noncompact ANR Y is a compactum $\widehat{Y}$ containing Y as an open subset and having the property that $\widehat{Y} - Y$ is a $\mathcal{Z}$-set in $\widehat{Y}$. These compactifications play an important role in group theory, where the universal cover of a $K(G, 1)$ is often $\mathcal{Z}$-compactified by adding a "group boundary". Bestvina has suggested that this approach be used to associate group boundaries to large classes of groups (possibly all) admitting finite $K(G, 1)$'s. Unfortunately, finding a $\mathcal{Z}$-compatification of a given topological space is a very delicate problem.

In this talk we will discuss topological issues related to finding $\mathcal{Z}$-compactifications of various spaces. Recent progress and a variety of open questions will be presented. (Received August 23, 2004)