Strategies for characterizing tame ends of manifolds

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Abstract. Let ε be an *inward tame* end of an n-manifold ($n \geq 6$). Two common, equivalent definitions are (informally) (1) ε admits a finite domination and (2) an arbitrary neighborhood of ε can be homotoped into a compact subset of the manifold. The former definition incorporates an abstract finite complex; the latter requires the construction of a homotopy for each open neighbor of ε. Among the drawbacks to these is the fact that each condition is difficult to check.

Guilbault and Tinsley (in a sequence of papers) have demonstrated necessary conditions to an end to be inward tame. Among these is that pro-$\pi_1(\varepsilon)$ must be semi-stable and the homology of ε must be stable. In addition, we have constructed several limiting examples. We seek a purely algebraic characterization of inward tame ends.