

ACYLINDRICAL SURFACES IN KNOT COMPLEMENTS

MARIO EUDAVE-MUÑOZ

(Joint work with Max Neumann-Coto)

We consider acylindrical surfaces in closed 3-manifolds and in the complement of knots and links in the 3-sphere, and show that the genus of these surfaces is bounded linearly by the number of tetrahedra in a triangulation of the manifold and by the number of rational (or alternating) tangles in a projection of a link (or knot). These are topological interpretations of a theorem of Hass, which says that there is a bound for the genus of an acylindrical surface in a hyperbolic 3-manifold in terms only of volume. We construct for each g examples of knots and links with tunnel number 2 and manifolds of Heegaard genus 3 which contain acylindrical surfaces of genus g , showing that there is no bound for the genus of an acylindrical surface in terms of tunnel number or Heegaard genus. We also give examples of 3-bridge knots containing quasi-Fuchsian surfaces of arbitrarily high genus, so the genus of this kind of surfaces is not bounded in terms of volume, crossing number or the number of tetrahedra.

UNIVERSIDAD NACIONAL AUTONOMA DE MEXICO