An enumeration of non-prime theta-curves and handcuff graphs

Hiromasa Moriuchi

OCAMI, Osaka City University

Abstract. We have enumerated all the prime theta-curves and handcuff graphs with up to seven crossings by using algebraic tangles and prime basic theta-polyhedra. Here, a theta-polyhedron is a connected graph embedded in a 2-sphere, whose two vertices are 3-valent, and the rest are 4-valent. We can obtain theta-curve and handcuff graph diagrams from theta-polyhedra by substituting algebraic tangles for their 4-valent vertices.

We can composite many spatial graphs by using "connected sum" of them. However, for spatial graphs, "connected sum" is not unique. Therefore we improve theta-polyhedra to enumerate non-prime theta-curves and handcuff graphs. In this talk, we enumerate non-prime theta-curves and handcuff graphs.