
DEBAJYOTI MONDAL, University of Waterloo
Contact Systems of Axis-aligned Strings in 3D

A string contact representation Ψ of a graph G maps the vertices of G to interior disjoint axis-aligned strings (simple polygonal chains), where no three strings meet at a point, and two strings share a common point if and only if their corresponding vertices are adjacent in G . The complexity of Ψ is the minimum integer r such that every string in Ψ is a B_r -string, i.e., a string with at most r bends. We prove that every graph G with maximum degree 4 admits a string contact representation with complexity 4. If G is Hamiltonian and triangle-free, then G has a representation, where all the strings but one are B_3 -strings. If G is 3-regular and bipartite, then G admits a string contact representation with complexity 2. If we further restrict G to be Hamiltonian, then G has a contact representation, where all the strings but one are B_1 -strings.