
Three Open Problems for Arrangements of Pseudocircles

Ronald Ortner (MU Leoben)

TUE/P2 12:00–12:20

An *arrangement of pseudocircles* is a finite collection of Jordan curves in the plane such that each two curves either have no points in common or otherwise intersect in exactly two points where they cross each other. We present three open problems concerning arrangements of pseudocircles:

1. *Enumeration:*

How many combinatorially distinct arrangements of n pseudocircles are there?

2. *Convex Realizability:*

Can any arrangement of pseudocircles be realized by a combinatorially equivalent arrangement of convex pseudocircles?

3. *Characterization of Weight Vectors:*

Given an arrangement of pseudocircles, let the *weights* v_k ($k = 0, 1, 2, \dots$) be defined as the number of intersection points contained in the interior of exactly k pseudocircles. For which vectors $(v_0, v_1, \dots, v_n) \in \mathbb{N}^{n+1}$ is there a corresponding arrangement of pseudocircles with *weight vector* (v_0, v_1, \dots, v_n) ?