

המחלקה למתמטיקה, בן-גוריון

קולוקוויום

ביום שלישי, 17 במאי, 2022

בשעה 14:30 – 15:30

ב-101 Math

ההרצאה

(1959) Problem Circle Ringel's to Solution A

תינתן על-ידי

(BGU) Smorodinsky Shakhar

תקציר: In 1959 Gerhard Ringel posed the following problem which remained open for 60 years. Suppose we are given a finite family of circles in the plane, no two of which are tangent internally, and no three of which are tangent pairwise at the same point. Is it possible to color the circles with five colors so that circles of the same color are pairwise disjoint (i.e., do not overlap)? When the circles are contained in a bounded disc, the answer is yes (this is the Four-Color-Theorem for planar graphs). In 1959 Ringel answered this question negatively. We construct families of circles in the plane such that their tangency graphs are two-colorable and have arbitrarily large girth. Moreover, the chromatic number of these graphs is two. This provides a strong counterexample to Ringel's conjecture that the chromatic number of a planar graph is at most four. The problem is open for general planar graphs.

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