Seminarium geometrów

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Group actions on quasi-median graphs and acylindrical hyperbolicity

Abstract: CAT(0) cube complexes form a class of non-positively curved spaces playing a special role in geometric group theory. For instance, such spaces arise naturally in the study of right-angled Artin or Coxeter groups. These complexes can be identified with the class of median graphs, and the latter can be generalised to quasi-median graphs, or 'CAT(0) prism complexes'. Recent work of A. Genevois has equipped quasi-median graphs with a rich combinatorial structure akin to that of CAT(0) cube complexes, which is useful in studying group actions. In particular, we may use quasi-median graphs to study graph products – a class of groups that interpolate between direct and free products.

In this talk I will give a brief introduction to quasi-median graphs and their cubical-like geometry. I will construct the 'contact graph' of a quasi-median graph, which turns out to be quasi-isometric to a tree, and explain the conditions under which a group action on a quasi-median graph induces a particularly nice (acylindrical) action on the contact graph. I will also discuss an application to solving equations in graph products.