

Seminarium geometrów

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Środa, 25.09.2019, 14:15, s. HS

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Crystallographic Helly groups

Abstract: A Helly graph is a graph in which the metric balls form a Helly family: any pairwise intersecting collection of balls has nonempty total intersection. A Helly group is a group that acts properly and cocompactly on a Helly graph. Helly groups simultaneously generalize hyperbolic, cocompactly cubulated and $C(4)–T(4)$ graphical small cancellation groups while maintaining nice properties, such as biautomaticity. I will show that if a crystallographic group is Helly then its point group preserves an l_∞ metric on \mathbb{R}^n . Thus we will obtain some new nonexamples of Helly groups, including the 3-3-3 Coxeter group, which is a systolic group. This answers a question posed by Chepoi during the Simons Semester this year at IMPAN.