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Fixed point free actions on Z-acyclic 2-complexes

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In this paper, we give a complete description of the finite groups which can act on 2-dimensional $\mathbf{Z}$-acyclic complexes without fixed points. One example of such an action (by the group A_5) has been known for a long time, but as far as we know it is the only such action constructed earlier. In fact, we construct here actions of this type for many different finite simple groups.

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