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Crystallographic groups and topology of Escher.

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The paper (in Spanish) presents an alternative approach to listing crystallographic groups in dimensions up to 3, as well as basic ideas of its generalization to listing hyperbolic crystallographic groups. The approach is based on the topological concept of orbifolds and their Euler characteristics. Although the concepts are more advanced than the ones needed to list crystallographic groups on basis of geometrical, or even classical group-theoretic, arguments, the deduction based on the concept of orbifolds is in itself quite simple and straightforward. The essential terms are explained in not too technical a manner, and basic theorems given, some with the corresponding proofs, but the overall approach is not too technical and adapted to non-specialists. Based on these general properties the deduction of the 17 wallpaper groups is described in detail, and with slightly less detail the 7 frieze groups and 32 crystallographic classes (corresponding to point groups, which in turn correspond to crystallographic spherical groups) are presented. All the ideas are well illustrated by examples from Escher (tessellations of Euclidean and hyperbolic plane), that make this paper a particularly interesting and enjoyable one for a reader with basic knowledge of abstract mathematical concepts like groups and manifolds, and can serve as a motivational introductory/review paper for a reader interested in this relatively new topic of (crystallographic) orbifolds. *Franka Miriam Bruckler (Zagreb)*

Classification: H45

Keywords: orbifolds; crystallographic groups; space groups; wallpaper groups; frieze groups; point groups; Euler characteristic