Poster Presentation

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Non-Perfect Colorings of Symmetrical Tilings with Color Groups of Index 4

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In this work we present a method that will allow for the construction and enumeration of non-perfect colorings of symmetrical tilings. If G is the symmetry group of an uncolored symmetrical tiling, then a coloring of the symmetrical tiling is non-perfect if its associated color group is a proper subgroup of G. The process will facilitate a systematic construction of non-perfect colorings of a wider class of symmetrical tilings where the stabilizer of a tile in the symmetry group G of the uncolored symmetrical tiling is non-trivial and the set of tiles may not form a transitive set under the action of G. This poster discusses results on how to identify and characterize non-perfect colorings arising from the method with associated color groups of index 4. The approach obtained here provides an avenue to model and characterize various chemical structures with atoms of different proportions, and their symmetries. This is relevant particularly for understanding new and emerging structures, such as structural analogues of carbon nanotubes, where a lot of its physical and electronic properties depend on their symmetry.

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