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On 3-isohedral tilings of sphere for group series $n\times$

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A tiling W of the sphere with disks is called k -isohedral with respect to a discrete isometry group G if G maps the tiling W onto itself and the disks of W fall into k transitivity classes under the action of the group G .

Two pairs (W, G) and (W', G') belong to the same Delone class if there exists a homeomorphic transformation φ of the sphere such that φ maps the tiling W onto the tiling W' and the relation $G = \varphi^{-1}G'\varphi$ holds.

Some methods were developed that make it possible to obtain $(k + 1)$ -isohedral tilings with disks if the respective k -isohedral tilings with disks are known. In [1] the splitting procedure was applied to isohedral tilings of the sphere with disks resulting in all the fundamental Delone classes of 2-isohedral tilings of the sphere with disks for all 7 infinite series and 7 sporadic discrete isometry groups of the sphere.

The splitting procedure has already been applied to 2-isohedral tilings of the sphere with disks for group series $*nn$, nn , $*22n$, and $n*$.

Now turning to the series $n\times$ of isometry groups (which corresponds to the series $\widetilde{2N}$ of 3-dimensional point groups of isometries) we restrict ourselves to 3-isohedral tilings with disks that have at least 3 vertices, so digonal disks are excluded. Thus the splitting procedure has been applied to all the 20 series of Delone classes of fundamental 2-isohedral tilings of the sphere with disks. As a result we have obtained 105 series of Delone classes of fundamental 3-isohedral tilings of the sphere with disks that have at least 3 vertices, among them 94 series of Delone classes are normal in terminology of Grünbaum and Shephard.

Bibliography

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