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Roman Nedela* (nedela@ntis.zcu.cz), Univerzitni 8, Pilsen, Czech Rep. *Complete regular dessins and skew-morphisms of cyclic groups.*

A dessin is a 2-cell embedding of a connected bipartite graph into a closed orientable surface with a fixed 2-colouring determining the bi-partition. The concept of dessins was introduced by Grothendieck as a combinatorial counterpart of algebraic curves. An automorphism of a dessin is a colour- and orientation-preserving map automorphism. A dessin is regular if its automorphism group is regular on the edges. If the underlying graph of a regular dessin is the complete bipartite graph $K_{m,n}$, we call it an (m, n) -complete regular dessin.

We introduce a correspondence between (m, n) -complete regular dessins and admissible pairs of skew-morphisms of the cyclic groups of orders m and n . A skew-morphism φ of a finite group A is a permutation on A such that $\varphi(1) = 1$ and $\varphi(xy) = \varphi(x)\varphi^{\pi(x)}(y)$ for all $x, y \in A$ where $\pi : A \rightarrow \mathbb{Z}_{|\varphi|}$ is an integer function. In particular, every group automorphism is a skew morphism. We determine the pairs (m, n) for which there exists exactly one dual pair of (m, n) -complete regular dessins thus generalising an elder result by Jones, Nedela and Škoviera (2008). This is a joint work with Kan Hu, M. Škoviera and Y.Q.Feng. (Received September 14, 2017)