ABSTRACT

FIXED CURVES ON PLATONIC RIEMANN SURFACES

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The main topic of this study, which consists of seven chapters, is to investigate fixed curves on platonic Riemann surfaces and some properties of these curves.

The first chapter is devoted to the introduction.

In the second chapter, basic concepts, which are necessary for the main topic of the thesis, were given.

In the third chapter, hyperbolic geometry has been shortly introduced.

The fourth chapter is devoted to Fuchsian groups, NEC (Non-Euclidean crystallographic) groups and Riemann surfaces.

In the fifth chapter, regular maps were introduced and classified.

In the sixth chapter, the patterns of fixed curves on platonic Riemann surfaces, which are the main topic of the thesis, were introduced and classified. Furthermore, it has been shown that for each curve there exist two automorphisms so called rotary automorphisms. These are inverses of each other and they rotate the curve in opposite directions. Finally, with the aid of these automorphisms the lengths of fixed curves on platonic Riemann surfaces of genera two and three have been calculated.

The seventh chapter involves the conclusion of study.

Key words: Riemann surfaces, Platonic surfaces, Regular maps, Fixed curve, Pattern, Rotary automorphism