

Matematika v glasbi

POVZETEK

V svojem diplomskem delu Matematika v glasbi sem obravnaval nekatere povezave med matematiko in glasbo. S pomočjo matematike sem poiskal razloge, ki so privedli do konstrukcije različnih glasbenih lestvic in uglasitev. Glavni poudarek pa sem posvetil simetrijam v glasbi. Natančneje me je zanimalo, kako lahko preštejem melodične vzorce določene dolžine in sozvočja oziroma akorde, pri čemer dva predstavnika izmed obeh skupin obravnavam kot enaka, če lahko enega dobim iz drugega s pomočjo simetrijskih preslikav. Burnsideovo lemo sem uporabil pri preštevanju melodičnih vzorcev, izrek Pólya pa pri preštevanju akordov.

Mathematics in music

ABSTRACT

The thesis Mathematics in Music analyses some of the connections between mathematics and music. With the help of mathematics, I indentified the reasons that led to the construction of different musical scales and tunings. The analysis mainly focused on symmetries in music. More precisely, I was interested in how to count the number of chords and melody patterns of a certain length. Two representatives of each group were considered to be equal if one can be obtained from the other using symmetries. I used Burnside's lemma to count the melodies and Pólya's theorem to count the chords.

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Ključne besede: glasbene lestvice, uglasitve, simetrije, Burnsideova lema, izrek Pólya

Keywords: musical scales, tunings, symmetries, Burnside's lemma, Pólya's theorem

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