

Abstract

The aim of this dissertation is to investigate the properties of Hardy–Orlicz spaces on planar domains and composition operators acting on these spaces.

In the first part of this thesis we extend the ideas of W. Rudin and define Hardy–Orlicz spaces on circular domains. The purpose is to show isomorphic and isometric characterizations of these spaces. For instance we show the variant of Fatou–Riesz theorem and we find direct sum representation. We also consider Hardy–Orlicz spaces on the annulus. Among others we describe the closed subspace of $L^\phi(\partial\mathbb{A})$ on the boundary of annulus which is isomorphic to Hardy–Orlicz space $H^\phi(\mathbb{A})$.

The second part of this dissertation is devoted to study Banach envelopes of Hardy–Orlicz spaces on the annulus. Using the techniques from Shapiro’s paper we present a description of Banach envelopes of these spaces in the case when the generating Orlicz function is well-estimated by power-type functions. As a consequence of this result we obtain a description of the dual of $H^\phi(\mathbb{A})$.

The last part of the thesis concerns the study of composition operators on Hardy–Orlicz spaces on the circular domains. Our goal is to describe compact composition operators in terms of Nevanlinna counting function and Carleson measures. We also study weak compactness, order boundedness and Dunford–Pettis property of composition operators.

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