HOLOMORPHIC VECTOR VALUED KÖTHE FUNCTION SPACES

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Three topics are studied in this thesis.

The first concerns a perfect sequence space called Köthe sequence space. We consider the sequence spaces equipped with linear topologies from the point of view of the duality theory, and deal with topological duals whose numbers are presentable as sequences. We prove that the Köthe sequence space is linearly homeomorphic to the space of holomorphic functions on the Riemann sphere. A characterization of nuclearity for the Köthe sequence spaces is obtained.

The second is on Köthe function spaces. We consider the pairs of subspaces of the space of locally integrable functions on a locally compact σ-compact Hausdorff space with the measure defined in terms of a linear functional on the space of continuous functions with compact support. The topologies on the Köthe spaces L and L' are given by the weak duality of the Köthe spaces Λ and Λ^X. We obtain a theorem on Köthe function spaces of nonatomic measure spaces on which there exist no nonzero continuous linear functionals.

The third topic deals with the vector valued functions of a Riemann sphere to a locally convex Hausdorff topological space. We find that certain properties of vector valued Köthe function spaces are characterized by the completion of the tensor product of a complete Köthe space with a solid topology and a complete locally convex Hausdorff space equipped with a topology of biequicontinuous convergences. We characterize certain types of the spaces of weakly holomorphic functions and integrable functions and their conjugate or adjoint spaces, and apply these characterizations to obtain an effective way of determining the adjoint space of holomorphic vector valued function spaces. We define a holomorphic vector valued Köthe function space via a measure space with a positive Radon measure characterized by the polar sets of compact sets of a locally convex topological space. We obtain a representation of holomorphic vector valued Köthe function spaces, and find that a holomorphic vector valued Köthe function space is linearly homeomorphic with the tensor product of a space of holomorphic functions and a locally convex topological space.

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