

NATIONAL CENTER FOR MATHEMATICS & ABDUS SALAM SCHOOL OF MATHEMATICAL SCIENCES G. C. UNIVERSITY, LAHORE

Hilbert Function Spaces

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In this lecture the goal is to introduce an area of modern analysis loosely termed Hilbert functions spaces. It involves the study of various separable Hilbert spaces of holomorphic functions and their operators. These methods have proven fruitful in resolving longstanding open problems, and provide paths to several others yet unresolved problems. Some of the topics that will be discussed are: The Hardy, Bergman and Dirichlet spaces Beurling's characterization of the shift-invariant subspaces The invariant subspace problem (ISP) Cyclic and hypercyclic operators Linear dynamics versus topological dynamics The Hilbert space of Dirichlet series and the Riemann zeta function A Hilbert space reformulation of the Riemann hypothesis.

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