UNITARY EQUIVALENCE OF ONE-PARAMETER GROUPS OF TOEPLITZ AND COMPOSITION OPERATORS

C. C. COWEN AND E. A. GALLARDO-GUTIÉRREZ

On the Hardy Hilbert space H^2 of the unit disk, an analytic Toeplitz operator is the operator of multiplication by a bounded analytic function and a composition operator is the operator of composing with an analytic function that maps the disk into itself. The composition operators on H^2 whose symbols are hyperbolic automorphisms of the unit disk fixing plus and minus 1 comprise a one-parameter group of bounded operators and the analytic Toeplitz operators coming from covering maps of annuli centered at the origin whose radii are reciprocals of each other also form a one-parameter group. The point spectra of the composition operators and the point spectra of the adjoints of the Toeplitz operators are each this family of open annuli. The subspace zH^2 forms a common invariant subspace for each operator in the group of analytic Toeplitz operators and for each operator in the group of adjoints of the composition operators. From the corresponding eigenvectors associated with the point spectra noted above, a direct unitary equivalence is found between the group of restrictions of the analytic Toeplitz operators and the group of restrictions of the adjoints of the composition operators.

DEPARTMENT OF MATHEMATICAL SCIENCES, INDIANA UNIVERSITY-PURDUE UNIVERSITY INDIANAPOLIS, INDIANAPOLIS, IN 46202, USA
E-mail address: ccowen@iupui.edu

DEPARTAMENTO DE MATEMÁTICAS, UNIVERSIDAD DE ZARAGOZA E IUMA, PLAZA SAN FRANCISCO S/N, 50009 ZARAGOZA, ESPAÑA
E-mail address: eva@unizar.es