A hyperbolic universal operator commuting with a compact operator.

Summary: A Hilbert space operator is called universal (in the sense of Rota) if every operator on the Hilbert space is similar to a multiple of the restriction of the universal operator to one of its invariant subspaces. We exhibit an analytic Toeplitz operator whose adjoint is universal in the sense of Rota and which commutes with a quasinilpotent, injective, compact operator with dense range, but unlike other examples, it acts on the Bergman space instead of the Hardy space and this operator is associated with a “hyperbolic” composition operator.

MSC:
47A15 Invariant subspaces of linear operators
47B35 Toeplitz operators, Hankel operators, Wiener-Hopf operators
47B33 Linear composition operators
47B38 Linear operators on function spaces (general)

Keywords:
invariant subspace; Bergman space; composition operator; Toeplitz operator; weighted composition operator; similarity; Rota’s universal operators

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References:


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