1077-47-264 **Carl C. Cowen*** (ccowen@math.iupui.edu). *Invariant Subspaces for Composition Operators.*
If ϕ is an analytic map of the disk into itself and H is a Hilbert space of analytic functions on the disk, the composition operator C_ϕ is the operator given by $C_\phi f = f \circ \phi$ for f in H.

Nordgren, Rosenthal, and Wintrobe (1984) observed that, if ϕ is a hyperbolic automorphism of the disk, then $C_\phi^* - I$ acting on the Hardy space is a 'universal operator' in the sense that every bounded operator on a Hilbert space is unitarily equivalent to a restriction of a multiple of this operator to an invariant subspace. This incomplete survey of results on invariant subspaces of composition operators will suggest that this is a rich area for future study.

The most striking result up to now has been the characterization by Montes, Ponce, and Shkarin (2010) of the lattice of invariant subspaces of a composition operator with symbol a linear fractional map of the disk into (but not onto) itself.

Much work, a promising beginning, concerns invariant subspaces of composition operators that are also invariant for the operator of multiplication by z. Work for Hermitian weighted composition operators has led to identifying extremal functions for subspaces in weighted Bergman spaces associated with the usual atomic inner functions. (Received August 17, 2011)