MULTIPLICATION OPERATORS ON LIPSCHITZ-TYPE SPACES OF A TREE

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In recent years, the operator theory of many functional Banach spaces that arise in complex function theory has been studied extensively. However, very little has been done in a discrete setting. An important class of operators to be discussed in this talk is the *multiplication operators*

$$M_\psi(f) = \psi f,$$

where ψ is a function defined on an infinite tree T called the *symbol* of the operator M_ψ, and f belongs to a functional Banach space with domain T. An environment for this study is a space of Lipschitz functions on T, that is, the functions f satisfying

$$|f(v) - f(w)| \leq C\, d(v, w), \quad v, w \in T,$$

for some $C > 0$, where $d(v, w)$ is the number of edges in the unique geodesic path from v to w. Characterizations on the boundedness and compactness of the operator M_ψ as well as operator norm and essential norm estimates and a description of the spectrum will be given. The multiplication operators on the weighted Lipschitz space on a tree T rooted at o consisting of the functions f on T such that

$$|f(v) - f(v^-)| = O(d(v, o)^{-1})$$

(where v^- is the neighbor of v closest to o) will be also considered. This is joint work with Glenn Easley and Robert Allen.