1084-47-153 **Raúl E. Curto*** (raul-curto@uiowa.edu), Department of Mathematics, The University of Iowa, Iowa City, IA 52242. *Subnormality of block Toeplitz operators on the Hardy space of the unit circle.*

In joint work with I.S. Hwang and W.Y. Lee, we study subnormal Toeplitz operators on the vector-valued Hardy space of the unit circle, along with an appropriate reformulation of P.R. Halmos's Problem 5: Which subnormal block Toeplitz operators are either normal or analytic? We extend and prove Abrahamse's Theorem to the case of matrix-valued symbols; that is, we show that every subnormal block Toeplitz operator with bounded type symbol (i.e., a quotient of two bounded analytic functions), whose analytic and co-analytic parts have the "left coprime factorization," is normal or analytic. We also prove that the left coprime factorization condition is essential.

We then apply this and related results to solve the following "Toeplitz completion" problem: Find the unspecified Toeplitz entries of the partial block Toeplitz matrix

$$A := \begin{bmatrix} T_z^* & ? \\ ? & T_z^* \end{bmatrix}$$

so that A becomes subnormal, where T_z is the unilateral shift on H^2. (Received August 29, 2012)