Meeting: 999, Nashville, Tennessee, SS 7A, Special Session on Operator Theory on Function Spaces

999-47-99   **Boo Rim Choe*** (`cbr@korea.ac.kr`), Department of Mathematics, Korea University, Anam-dong 5 ga 1, Seongbuk-gu, 136-713 Seoul, South Korea, and **Hyungwoon Koo** and **Wayne Smith**. *Composition operators on small holomorphic Sobolev spaces.* Preliminary report.

We show that if a small holomorphic Sobolev space on the unit disk is not just small but very small, then a trivial necessary condition is also sufficient for a composition operator to be bounded. A similar result for holomorphic Lipschitz spaces is also obtained. These results may be viewed as boundedness analogues of Shapiro's theorem concerning compact composition operators on small spaces. We also prove the converse of Shapiro's theorem if the symbol function is already contained in the space under consideration. In the course of the proofs we characterize the bounded composition operators on the Zygmund class. Also, as a by-product of our arguments, we show that small holomorphic Sobolev spaces are algebras. (Received August 16, 2004)