1015-46-155 **Josefina Alvarez*** (`jalvarez@nmsu.edu`), Las Cruces, NM 88003-8001, and **Hamed Obiedat** (`hobiedat@nmsu.edu`), Las Cruces, NM 88003-8001. *Topological Characterizations of the Beurling-Bjorck Space.*

Roughly speaking, the Beurling-Bjorck space quantifies the subexponential decay of a function and all its derivatives. The topological dual is a space strictly larger than the space of tempered distributions. The functionals in the topological dual are called tempered ultra-distributions. We prove several topological characterizations of the Beurling-Bjorck space, following up on recent work of K. Grochenig, G. Zimmermann, S.-Y. Chung, D. Kim and S. Lee. We use these characterizations to prove a structure theorem for tempered ultra-distributions, which we apply to extend the notion of convolution. (Received February 02, 2006)