

Meeting: 1004, Bowling Green, Kentucky, SS 8A, Special Session on Topology, Convergence, and Order, in Honor of Darrell Kent

1004-46-146 **Ronald J. Beattie*** (rbeattie@mta.ca), Dept. of Mathematics and Computer Science, Mount Allison University, 67 York St., Sackville, N.B. E4L 1E6, Canada. *On the Pontryagin duality in groups.*

The classical Pontryagin Duality Theorem states that a locally compact, commutative topological group G is isomorphic to its second character group. Here, the character group $\Gamma(G)$ and its character group $\Gamma\Gamma(G)$ carry the compact open topology. In generalizing this theorem to groups which are not necessarily locally compact, some serious problems have arisen. In general, the canonical mapping $\alpha : G \rightarrow \Gamma\Gamma(G)$ of a group into its second character group need not be continuous. Also products of topological groups are carried into a rather unnatural construct.

A second setting is available for duality. In the larger setting of convergence groups, one may use continuous convergence on the character groups. The two dualities coincide in the classical case of locally compact topological groups. In general, however, continuous duality seems to offer some improved results. The canonical mapping of a group into its continuous second character group is always continuous. Also continuous convergence converts products into coproducts and vice versa.

We examine these two dualities and compare them in more detail . (Received January 23, 2005)