Meeting: 1003, Atlanta, Georgia, AMS CP 1, AMS Contributed Paper Session

1003-22-234 **Peter Loth*** (lothp@sacredheart.edu), Department of Mathematics, Sacred Heart University, 5151 Park Avenue, Fairfield, CT 06825. *T-pure and almost pure exact sequences of LCA groups.* Preliminary report.

A proper short exact sequence $0 \to A \xrightarrow{\alpha} B \to C \to 0$ in the category of locally compact abelian groups is called *almost pure* if $\alpha(A) \cap nB \subseteq \overline{n\alpha(A)}$ for all positive integers n. The sequence is called *t-pure* if $\alpha(A)$ is a topologically pure subgroup of B, that is, if $\alpha(A) \cap \overline{nB} = \overline{n\alpha(A)}$ for all positive integers n. Letting $\mathrm{Tpext}(C, A)$ denote the set of elements in $\mathrm{Ext}(C, A)$ represented by t-pure exact sequences, we show that the first Ulm subgroup of $\mathrm{Ext}(C, A)$ need not be equal to $\mathrm{Tpext}(C, A)$. Some stuctural information is obtained on those groups G satisfying $\mathrm{Tpext}(X, G) = 0$ for all groups X. We describe the locally compact abelian groups G with the property that every almost pure extension of G by a locally compact abelian group X splits. (Received September 01, 2004)