Meeting: 1004, Bowling Green, Kentucky, SS 10A, Special Session on Hopf Algebras and Related Topics

1004-16-54 **Alfons Van Daele*** (Alfons.VanDaele@wis.kuleuven.ac.be), Department of Mathematics, K.U.Leuven, Celestijnenlaan 200B, B-3001 Heverlee, Belgium. *Multiplier Hopf algebras with integrals.*

If A is a finite-dimensional Hopf algebra, the dual space A' can again be made into a Hopf algebra in a natural way. However, if A is not finite-dimensional, the dual space is an algebra but the natural candidate for the comultiplication on A' will no longer map A' into $A' \otimes A'$. If A is a Hopf algebra with integrals, it is possible to define a subalgebra $\hat{A}$ of A' (which in general will no longer have an identity) and define a coproduct $\hat{\Delta}$ mapping $\hat{A}$ into $M(\hat{A} \otimes \hat{A})$ (the multiplier algebra of $\hat{A} \otimes \hat{A}$) so that the pair $(\hat{A}, \hat{\Delta})$ becomes a *multiplier Hopf algebra* with integrals. More generally, for any multiplier Hopf algebra A with integrals, it is possible to define the dual $\hat{A}$, again a multiplier Hopf algebra with integrals. The dual of $\hat{A}$ is again A. This duality extends the Pontryagin duality between abelian compact groups (resp. compact quantum groups) and abelian discrete groups (resp. discrete quantum groups). We will give precise definitions and an overview of the results. We will also explain briefly how all of this eventually led to a nice theory of locally compact quantum groups. (Received January 13, 2005)