1044-22-219 **Alexandru Gabriel Atim*** (atimg@gwm.sc.edu), USC Lancaster, P O Box 889, Lancaster, SC 29721, and **Robert R Kallman**. *The Polish Group Topology on the Unitary Group is Unique.*

Let $\mathcal{H}$ be an infinite dimensional separable Hilbert space, $\mathcal{U}(\mathcal{H})$ the unitary group acting on $\mathcal{H}$, G a complete separable metric topological group and $\phi : G \to \mathcal{U}(\mathcal{H})$ an algebraic isomorphism. Then ϕ is a topological isomorphism. The theorem is false for $\mathcal{U}(\mathcal{H})$ if $\mathcal{H}$ is finite dimensional. If $\mathcal{H}$ is a real infinite dimensional separable Hilbert space, the theorem is true for the orthogonal group $\mathcal{O}(\mathcal{H})$. Similar theorems hold for the associated projective groups. (Received September 02, 2008)