

Presenter: Merve Kovan

Title: Counting and Classifying the Closed Subgroups of a Compact Abelian Group

Abstract:

Using the Pontryagin Duality and results of S. Fisher, P. Gartside (1991); P. Gartside, M. Smith (2007) and Y.D. Cornulier, L. Guyot, W. Pitsch (2008) we show that the space $\mathcal{S}(A)$ of all closed subgroups of a compact Abelian group A is countable if and only if there is a closed subgroup K of A such that K is topologically isomorphic to $\bigoplus_{i=1}^h \mathbb{Z}_{p_i} \oplus G$ and A/K is topologically isomorphic to $\mathbb{T}^h \oplus \tilde{G}$, where G, \tilde{G} are finite abelian groups and all p_i 's are distinct primes. And in this case $\mathcal{S}(A)$ is homeomorphic to $S^n \times [m]$, where $n \neq m$ can be computed exactly. Here S is homeomorphic to the subset $\{1/n : n \geq 1\} \cup \{0\}$ of \mathbb{R} and $[m] = \{0, 1, \dots, m-1\}$.