1176-05-121   **Anh N Le***, 231 West 18th Ave, Columbus, OH 43210, and **Thai Hoang Le**. *Bohr sets in sumsets: Compact groups.*

Let G be a compact abelian group and ϕ_1, ϕ_2, ϕ_3 be continuous endomorphisms on G. Under certain natural assumptions on the ϕ_i's, we prove the existence of Bohr sets in the sumset $\phi_1(A) + \phi_2(A) + \phi_3(A)$, where A is either a set of positive Haar measure, or comes from a finite partition of G. The first result generalizes theorems of Bogolyubov and Bergelson-Ruzsa. As a variant of the second result, we show that for any partition $\mathbb{Z} = \bigcup_{i=1}^{r} A_i$, there exists an i such that $A_i - A_i + sA_i$ contains a Bohr set for any $s \in \mathbb{Z} \setminus \{0\}$. The latter is a step toward an open question of Katznelson and Ruzsa. (Received January 18, 2022)