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A Banach-Steinhaus Type Theorem

We introduce the notion of an asymptotically equicontinuous sequence of linear operators, and use it to prove the following result. If X, Y are topological vector spaces, if $T_n, T : X \rightarrow Y$ are continuous linear maps, and if D is a dense subset of X , then the following statements are equivalent:

- i) $T_n x \rightarrow Tx$ for all $x \in X$, and
- ii) $T_n x \rightarrow Tx$ for all $x \in D$ and the sequence (T_n) is asymptotically equicontinuous.