DEPARTMENT OF MATHEMATICS

TECHNICAL REPORT

STEINHAUS PROPERTY IN BANACH LATTICES

DAMIAN KUBIAK AND DAVID TIDWELL

SPRING 2015

No. 2015-1

TENNESSEE TECHNOLOGICAL UNIVERSITY
Cookeville, TN 38505

STEINHAUS PROPERTY IN BANACH LATTICES

DAMIAN KUBIAK AND DAVID TIDWELL

Abstract.

3 Steinhaus property in Banach spaces

[illegible]

Theorem 3.1 [2]. A Banach space $(X, \|\cdot\|)$ has the Steinhaus property if and only if for every $x, y \in S(X)$ and for every $\varepsilon > 0$ there exists $z \in X$ such that $\|z\| < \varepsilon$ and $\max\{\|x+z\|, \|y+z\|\} > 1 > \min\{\|x+z\|, \|y+z\|\}$.

Proof. [illegible] X [illegible] $x, y \in S(X)$, $x \neq y$ [illegible] $\lambda \in (0, 1)$ [illegible]
$A =$

[illegible] $\|x + z\| > 1$ [illegible] X [illegible]
[illegible]

4. Steinhaus property in some Banach lattices

[illegible]
[illegible]

Lemma 4.1. A strictly monotone Banach lattice $(E, \|\cdot\|_E)$ has the Steinhaus property if and only if for every $x, y \in S(E)$, $x, y > 0$, $x \neq y$ and for every > 0 there is $z \in E$ with $\|z\|$