

# Unbounded Order Continuous Operators

Mohammad Marabeh, PhD student

Orta Doğu Teknik Üniversitesi (ODTÜ)

06/01/2016

## Abstract

A linear operator between two Riesz spaces  $E$  and  $F$  is said to be unbounded order continuous (or uo-continuous, for short) whenever it maps each unbounded order null net in  $E$  into an unbounded order null net in  $F$ , and it is said to be  $\sigma$ -unbounded order continuous (or  $\sigma$ uo-continuous, for short) if each unbounded order null sequence in  $E$  is mapped into an unbounded order null sequence in  $F$ .

We begin this talk by a review of some basic notions and results from the theory of Riesz spaces. Then we will recall the “unbounded order convergence” (abbreviated, uo-convergence) of nets in Riesz spaces, and demonstrate some recent characterizations of it. Later we will give some properties of uo-continuous and  $\sigma$ uo-continuous operators. We will also characterize the *uo-continuous* (respectively,  *$\sigma$ uo-continuous*) *dual* of some well-known Riesz spaces. Finally, as an application of uo-convergence and uo-continuity we establish two variants of Brézis-Lieb lemma in Riesz spaces.

**PS:** This work is a part of ongoing thesis under supervision of Prof. Eduard Emelyanov, Orta Doğu Teknik Üniversitesi (ODTÜ).