1134-03-403 **C Ward Henson*** (henson@math.uiuc.edu), 1409 W. Green St., Urbana, IL 61801.
Axiomatizable classes of Banach spaces via disjointness preserving automorphisms. Preliminary report.

Here $\mathcal{C}$ is a class of Banach lattices and $\mathcal{C}^{\mathcal{B}}$ is the class of underlying Banach spaces of members of $\mathcal{C}$. Both are considered as classes of metric structures, using continuous model theory with appropriate signatures. Recently Yves Raynaud published the following result [Thm 3.7, in *Positivity*, 2017]:

Theorem 1: Assume $\mathcal{C}$ is axiomatizable, and every $X \in \mathcal{C}$ satisfies: (a) X is order continuous; and (b) every linear isometric embedding from X into an ultrapower of X is disjointness preserving. Then $\mathcal{C}^{\mathcal{B}}$ is axiomatizable.

Using model theory more explicitly (especially definability in continuous model theory), one can improve Theorem 1 by weakening assumption (b):

Theorem 2: Assume $\mathcal{C}$ is axiomatizable, and every $X \in \mathcal{C}$ satisfies: (a) X is order continuous; and (b) every surjective linear isometric map from X onto X is disjointness preserving. Then $\mathcal{C}^{\mathcal{B}}$ is axiomatizable.

These theorems yield new examples and simpler proofs of known examples. (Received September 12, 2017)