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Order-isomorphism and a projection's diagram of C(X)

Ahmed S. AL-RAWASHDEH
Department of Mathematical Sciences
United Arab Emirates University
B.O.Box 17551, Al-Ain, Abu Dhabi, UAE
e-mail: aalrawashdeh@uaeu.ac.ae
On Leave from Jordan University of Science and Technology
Department of Mathematics and Statistics
Irbid-JORDAN
e-mail: rahmed72@just.edu.jo
Sultan M. AL-SULEIMAN
Department of Mathematics and Statistics
Jordan University of Science and Technology
P.O. Box3030 Irbid 22110, JORDAN
e-mail: msultan82@gmail.com

Abstract: A mapping between projections of C^*-algebras preserving the orthogonality, is called an orthoisomorphism. We define the order-isomorphism mapping on C^*-algebras, and using Dye's result, we prove in the case of commutative unital C^*-algebras that the concepts; order-isomorphism and the orthoisomorphism coincide. Also, we define the equipotence relation on the projections of C(X); indeed, new concepts of finiteness are introduced. The classes of projections are represented by constructing a special diagram, we study the relation between the diagram and the topological space X. We prove that an order-isomorphism, which preserves the equipotence of projections, induces a diagram-isomorphism; also if two diagrams are isomorphic, then the C^*-algebras are isomorphic.

Key Words: Commutative C^*-algebras; projections order-isomorphism; infinite projections; clopen subsets