

ON EXTENDING AUTOMORPHISMS IN BANACH SPACES

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ABSTRACT. A Banach space X shall be called *extensible* if every operator $E \rightarrow X$ from a subspace $E \subset X$ can be extended to an operator $X \rightarrow X$. The space X shall be called *automorphic* if every into isomorphism $E \subset X$ for which $\text{dens } X/E = \text{dens } X/TE$ can be extended to an automorphism $X \rightarrow X$. Lindenstrauss and Rosenthal proved that c_0 is automorphic and conjecture that c_0 and l_2 are the only separable automorphic spaces. Moreover, they ask about the extensible or automorphic character of $c_0(\Gamma)$, for Γ non-countable. We solve affirmatively these two last questions. About the conjecture, we will show that every automorphic space must be extensible and study the local structure of extensible spaces. In particular, we prove that an extensible space can not contain uniformly complemented copies of l_p^n , $1 \leq p < \infty$. From all that approach we derive, that spaces such as $L_p(\mu)$, $p \neq 2$, $C(K)$ spaces not isomorphic to c_0 for K metric compact, the Gurarij space, Tsirelson space or the Argyros-Deliyanni HI space are not automorphic.