Some Bicyclic Antiautomorphisms of Mendelsohn Triple Systems

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A cyclic triple, (a, b, c), is defined to be the set $\{(a, b), (b, c), (c, a)\}$ of ordered pairs. A Mendelsohn triple system of order v, or MTS(v), is a pair (M, β), where M is a set of v points and β is a collection of cyclic triples of pairwise distinct points of M satisfying the condition that any ordered pair of distinct points of M exists in exactly one cyclic triple of β. An antiautomorphism of a Mendelsohn triple system, (M, β), is a permutation of M which maps β to β^{-1}, where $\beta^{-1} = \{(c, b, a)|(a, b, c) \in \beta\}$. Necessary conditions for the existence of an MTS(v) admitting an antiautomorphism consisting of two cycles of lengths M and N, where $1 < M < N$, have been shown, and for the case of $N = 2M$, sufficiency has been shown. We show sufficiency for certain cases in which $N > 2M$.

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