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Continuous functions between Isbell-Mrówka spaces

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Abstract: Let $\Psi(\Sigma)$ be the Isbell-Mrówka space associated to the MAD-family Σ. We show that if G is a countable subgroup of the group $\mathbf{S}(\omega)$ of all permutations of ω, then there is a MAD-family Σ such that every $f \in G$ can be extended to an autohomeomorphism of $\Psi(\Sigma)$. For a MAD-family Σ, we set $Inv(\Sigma) = \{f \in \mathbf{S}(\omega) : f[A] \in \Sigma \text{ for all } A \in \Sigma\}$. It is shown that for every $f \in \mathbf{S}(\omega)$ there is a MAD-family Σ such that $f \in Inv(\Sigma)$. As a consequence of this result we have that there is a MAD-family Σ such that $n + A \in \Sigma$ whenever $A \in \Sigma$ and $n < \omega$, where $n + A = \{n + a : a \in A\}$ for $n < \omega$. We also notice that there is no MAD-family Σ such that $n \cdot A \in \Sigma$ whenever $A \in \Sigma$ and $1 \leq n < \omega$, where $n \cdot A = \{n \cdot a : a \in A\}$ for $1 \leq n < \omega$. Several open questions are listed.

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