# An introduction to the reconstruction of the topology on monoids of the rationals.

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**Abstract**

For a set $A$, the set of all unary functions from $A$ to $A$ is denoted by $\mathrm{O}_A^{(1)}$. Subsets of $\mathrm{O}_A^{(1)}$ which are closed under composition and contain the identity, form monoids, called *transformation Monoids* on $A$. These carry a natural topology, induced by the topology of point-wise convergence. A *Topological Monoid* is an abstract monoid equipped with a topology under which the composition is continuous. The endomorphism monoids $\mathrm{End}(\mathcal{A})$ of a relational structure $\mathcal{A}$ are viewed abstractly as topological monoids whose topology is the natural one. We study when $\mathrm{End}(\mathbb{Q},<), \mathrm{End}(\mathbb{Q},\leq)$ have the property that every monoid isomorphism to the endomorphism monoid of another relational structure $\mathcal{B}$ is automatically a homeomorphism, which allows to reconstruct their topology.