

# SIMPLE AND IMMUNE RELATIONS ON COUNTABLE STRUCTURES

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*Abstract*

Let  $\mathcal{A}$  be a computable structure and let  $R$  be a new relation on its domain. We establish a necessary and sufficient condition for the existence of a copy  $\mathcal{B}$  of  $\mathcal{A}$  in which the image of  $R$  ( $\neg R$ , respectively) is simple (immune, respectively) relative to  $\mathcal{B}$ . We also establish, under certain effectiveness conditions on  $\mathcal{A}$  and  $R$ , a necessary and sufficient condition for the existence of a computable copy  $\mathcal{B}$  of  $\mathcal{A}$  in which the image of  $R$  ( $\neg R$ , respectively) is simple (immune, respectively).