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Q-reducibility and m-reducibility on computably enumerable sets

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Abstract

© 2014, Pleiades Publishing, Ltd. We study the distinctions between Q-reducibility and m-reducibility on computably enumerable sets. We construct a noncomputable m-incomplete computably enumerable set B such that all computably enumerable sets $A \leq_Q B$ satisfy $A \leq_m B$. We prove that for every noncomputable computably enumerable set A there exists a computably enumerable set B such that $A \leq_Q B$ but $A \not\leq_m B$. We prove that for every simple set B there exists a computably enumerable set A such that $A \leq_Q B$ but $A \not\leq_m B$. The last result implies in particular that the Q-degree of every simple set contains infinitely many computably enumerable m-degrees.

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Keywords

computably enumerable set, m-reducibility, Q-reducibility, simple set