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Classifying \mathcal{D} -maximal sets

In 1974, Soare proved that the maximal sets form an orbit under the automorphism group of \mathcal{E} , the set of computably enumerable sets under inclusion. In 1992, Downey and Stob showed that the *hemimaximal sets*, nontrivial splits of maximal sets, also form an orbit. Here, we examine the \mathcal{D} -maximal sets, a further generalization of the maximal sets that encompasses the hemimaximal sets as well. Let $\mathcal{D}(A)$ consist of the c.e. sets disjoint from A . A set is *\mathcal{D} -maximal* if the quotient $\mathcal{L}(A)/\mathcal{D}(A)$ is the two element boolean algebra. We develop a classification of the \mathcal{D} -maximal sets and show that they break into infinitely many orbits. This work is joint with Peter Cholak and Peter Gerdes.