Closure of set families by set operators

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Abstract: Given a family of subsets $S$ of a ground set $X$ and a set of set operators $F$, the closure of $S$ by $F$ is the smallest family of subsets that contains $S$ and which is closed under the operators in $F$. We will show that one can compute in polynomial delay the closure of any family of sets by any set of operators and that one can decide in polynomial time if a given set belong to the closure. We will see that this problem can be also formulated in terms of binary vectors and boolean functions.