1145-VP-2891 **Gregory Churchill***, gregory.churchill@oswego.edu. *An Extension of Hansel's Theorem to Hypergraphs.*

For integers $n \geq k \geq 2$, let V be an n-element set, and let $\binom{V}{k}$ denote the set of all k-element subsets of V. Let $\mathcal{C}$ be a collection of pairs $\{A, B\} \in \mathcal{C}$ of disjoint subsets $A, B \subset V$. We say that $\mathcal{C}$ covers $\binom{V}{k}$ if, for every $K \in \binom{V}{k}$, there exists $\{A, B\} \in \mathcal{C}$ so that $K \subset A \dot{\cup} B$ and $K \cap A \neq \emptyset \neq K \cap B$. When $k = 2$, such a family $\mathcal{C}$ is called a separating system of V, where this concept was introduced by Rényi, and studied by many authors.

Let $h(n, k)$ denote the minimum value of $\sum_{\{A,B\} \in \mathcal{C}} (|A| + |B|)$ over all covers $\mathcal{C}$ of $\binom{V}{k}$.Hansel determined the sharp bounds $\lceil n \log_2 n \rceil \leq h(n, 2) \leq n \lceil \log_2 n \rceil$, and Bollobás and Scott sharpened these bounds to an exact formula for $h(n, 2)$, for all integers $n \geq 2$. Here, we extend these results by determining an exact formula for $h(n, k)$, for all integers $n \geq k \geq 2$. (Received September 25, 2018)