A $k$–uniform hypergraph $H = (V; E)$ is called self-complementary if there is a permutation $\sigma : V \to V$, called self-complementing, such that for every $k$–subset $e$ of $V$, $e \in E$ if and only if $\sigma(e) \notin E$. In other words, $H$ is isomorphic with $H' = (V; \binom{V}{k} - E)$.

In the paper, for every $k$, $1 \leq k \leq n$, we give a characterisation of self-complementing permutations of $k$–uniform self-complementary hypergraphs of order $n$. This characterisation implies the well known results for self-complementing permutations of graphs, given independently in the years 1962–1963 by Sachs and Ringel, and those obtained for 3–uniform hypergraphs by Kocay, for 4–uniform hypergraphs by Szymański, and for general (not uniform) hypergraphs by Zwonek.