

A hypergraph is a tuple  $H = (V, E)$ , where  $E$  is a collection of subsets of  $V$  (a graph is just a hypergraph in which all sets in  $E$  have size two). A transversal (or “hitting set”) of a hypergraph  $H = (V, E)$  is a set  $t \subseteq V$  such that for every  $e \in E$ ,  $t \cap e \neq \emptyset$ . A transversal  $t$  is minimal if no proper subset of  $t$  is a transversal.

If  $H$  is a hypergraph, then  $\text{Tr}(H)$  is the set of all minimal transversals of  $H$ . Consider the following language.

$$\text{TRANSVERSAL-HYPERGRAPH} = \{\langle H, G \rangle \mid G = \text{Tr}(H)\}$$

Show that  $\text{TRANSVERSAL-HYPERGRAPH} \in \mathbf{co-NP}$ .