The poset on connected graphs is Sperner

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Let $\mathcal{G}$ be the set of all connected graphs on vertex set $[n]$. Define the partial ordering $<$ on $\mathcal{G}$ as follows: for $G, H \in \mathcal{G}$ let $G < H$ if $E(G) \subset E(H)$. The poset $(\mathcal{G}, <)$ is graded, each level containing the connected graphs with the same number of edges. We prove that $(\mathcal{G}, <)$ has the Sperner property, namely that the largest antichain of $(\mathcal{G}, <)$ is equal to its largest sized level.

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