Definition (Chain in a poset). Given a poset $P = \langle P, \leq_P \rangle$, a *chain* is a sub-

set $S \subseteq P$ such that any two elements of S are comparable: if $x, y \in S$, then

 $x \leq_{\mathbf{p}} y$ or $y \leq_{\mathbf{p}} x$.