for all $b \in S$. In formulas: $\operatorname{Max}: \mathscr{P}\mathbf{P} \to \mathcal{A}\mathbf{P}$ $S \mapsto \{x \in S: (y \in S) \land (y \geq x) \Rightarrow (x = y)\}.$

Note that Max(S) could be empty.

Definition (Max). Max: $\mathcal{P}P \to \mathcal{A}P$ is the map that sends a subset S of a poset

to the maximal elements of that subset, i.e., those elements $a \in S$ such that $a \geq b$