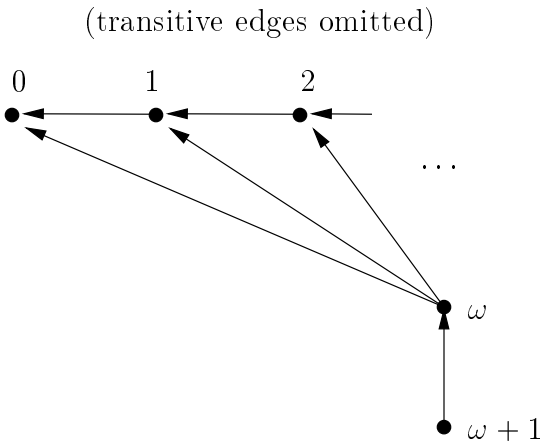
Definition 3.31 (KvB). Let $\mathcal{F}_\omega$ be the frame



S_ω is the set of models $\mathcal{M} = (\mathcal{F}_\omega, V)$ such that, for each propositional letter p, either

(i) $V(p)$ is finite and $\omega \notin V(p)$, or

(ii) $V(p)$ is co-finite (i.e. $W \setminus V(p)$ is finite) and $\omega \in V(p)$.

KvB is the set of formulas globally true in all models of S_ω.

Theorem 3.32. KvB is a normal modal logic.

Two important formulas:

$\vartheta = \Box\Diamond\top \to \Box(\Box(\Box p \to p) \to p)$

$\chi = \Box\bot \vee \Diamond\Box\bot$

Lemma 3.33. $\vartheta \in$ KvB and $\chi \notin$ KvB.

Lemma 3.34. For any frame $\mathcal{F}$, $\Vdash_{\mathcal{F}} \vartheta$ implies $\Vdash_{\mathcal{F}} \chi$.