**Tableau**s are certain (downward-branching) trees of **signed formulas**, i.e., pairs consisting of a truth value sign (T or F) and a sentence $T\varphi$ or $F\varphi$.

A **tableau** begins with a number of **assumptions**. Each further **signed formula** is generated by applying one of the inference rules. Some inference rules add one or more **signed formulas** to a tip of the tree; others add two new tips, resulting in two branches. Rules result in **signed formulas** where the formula is less complex than that of the **signed formula** to which it was applied. When a branch contains both $T\varphi$ and $F\varphi$, we say the branch is **closed**. If every branch in a **tableau** is closed, the entire **tableau** is closed. A closed **tableau** constitutes a derivation that shows that the set of **signed formulas** which were used to begin the **tableau** are unsatisfiable. This can be used to define a $\vdash$ relation: $\Gamma \vdash \varphi$ iff there is some finite set $\Gamma_0 = \{\psi_1, \ldots, \psi_n\} \subseteq \Gamma$ such that there is a closed **tableau** for the assumptions

$$\{F\varphi, T\psi_1, \ldots, T\psi_n\}.$$ 

For modal logics, we have to both extend the notion of **signed formula** and add rules that cover $\square$ and $\Diamond$. In addition to a sign(T or F), **formulas** in modal **tableaux** also have **prefixes** $\sigma$. The prefixes are non-empty sequences of positive integers, i.e., $\sigma \in (\mathbb{Z}^+)^* \setminus \{\Lambda\}$. When we write such prefixes without the surrounding $\langle \rangle$, and separate the individual elements by $.$’s instead of $,’$s. If $\sigma$ is a prefix, then $\sigma.n$ is $\sigma \prec \langle n \rangle$; e.g., if $\sigma = 1.2.1$, then $\sigma.3$ is $1.2.1.3$. So for instance,

$$1.2 T\square \varphi \rightarrow \varphi$$

is a **prefixed signed formula** (or just a **prefixed formula** for short).

Intuitively, the prefix names a world in a model that might satisfy the **formulas** on a branch of a **tableau**, and if $\sigma$ names some world, then $\sigma.n$ names a world accessible from (the world named by) $\sigma$.

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**Bibliography**