Unifikation (Robinson, [Rob65])

Unifikationsalgorithmus: $\texttt{unify}(C) =$

$\texttt{if}\ C\ \texttt{==}\ \emptyset\ \texttt{then}\ []$
$\texttt{else let}\ \{\theta_l = \theta_r\} \cup C' = C\ \texttt{in}$
$\quad \texttt{if}\ \theta_l\ \texttt{==}\ \theta_r\ \texttt{then unify}(C')$
$\quad \texttt{else if}\ \theta_l\ \texttt{==}\ \texttt{Y and Y} \notin FV(\theta_r)\ \texttt{then unify}([\texttt{Y} \Rightarrow \theta_r]\, C') \circ [\texttt{Y} \Rightarrow \theta_r]$
$\quad \texttt{else if}\ \theta_r\ \texttt{==}\ \texttt{Y and Y} \notin FV(\theta_l)\ \texttt{then unify}([\texttt{Y} \Rightarrow \theta_l]\, C') \circ [\texttt{Y} \Rightarrow \theta_l]$
$\quad \texttt{else if}\ \theta_l\ \texttt{==}\ \texttt{f}(\theta_l^1, \ldots, \theta_l^n)\ \texttt{and}\ \theta_r\ \texttt{==}\ \texttt{f}(\theta_r^1, \ldots, \theta_r^n)$
$\qquad \texttt{then unify}(C' \cup \{\theta_l^1 = \theta_r^1, \ldots, \theta_l^n = \theta_r^n\})$
$\quad \texttt{else}\ \textbf{fail}$

$\texttt{Y} \in FV(\theta)$ occur check, verhindert zyklische Substitutionen

Korrektheitstheorem

$\texttt{unify}(C)$ terminiert und gibt *mgu* für C zurück, falls C unifizierbar, ansonsten **`fail`**.

Beweis: Siehe [Pie02]