

Substitution of species

Definition

Let,

$$\begin{aligned}
 F, G : \text{Combinatorial structure} \ni G[\emptyset] &= \emptyset \\
 \Rightarrow F \circ G &= \sum_{\pi \in \text{Par}[U]} F[\pi] \times \prod_{p \in \pi} G[p] \\
 &= \{(\pi, \phi, \gamma) : \text{Par}[U] \times F[\pi] \times (\gamma_p)_{p \in \pi}\}
 \end{aligned}$$

Example

