

SUM OR DISJOINT UNION

A special operation on sets forms a single set, like the operation union, but keeps the elements tagged with their origin set. We can use the sequence to do this by defining an operation Σ on a sequence θ :

$$\Sigma\theta \triangleq \{[i, x] \mid i \in \text{dom } \theta \text{ and } x \in (\theta i)\}.$$

The sum is then defined by: $S + T \triangleq \Sigma\langle S, T \rangle$.

In general we can write: $\sum_{i=1}^n S_i \triangleq S_1 + S_2 + \dots + S_n \triangleq \Sigma\langle S_1, S_2, \dots, S_n \rangle$