Definition (Algebraic definition of UMCDPs). An Uncertain MCDP (UMCDP) is a tuple $\langle \mathcal{A}, \mathbf{T}, \boldsymbol{v} \rangle$, where $\mathcal{A}$ is a set of atoms, $\mathbf{T} \in \mathsf{Terms}(\{\mathsf{series}, \mathsf{par}, \mathsf{loop}\}, \mathcal{A})$ is the algebraic representation of the graph, and $\boldsymbol{v} : \mathcal{A} \to \mathbf{UDP}$ is a valuation that assigns to each atom a UDP.