$$\mu \cdot \mu = \mu \cdot D\mu$$

$$D(X) = \{\varphi \mid \varphi : X \to [0,1],\ \sum \varphi(x) \leq 1\}$$

$\mathrm{supp}(\varphi)$ is finite

Representation convention $\varphi \in D(X)$

$\sum_I r_i x_i$ where $r_i = \varphi(x_i)$

$I = |\mathrm{supp}(\varphi)|$

we represent every distribution as a formal sum. Then,

$$\mu\left(\sum_I r_i \left(\sum_J r_{ij}\, x_{ij}\right)\right) = \sum_{I,J} (r_i r_{ij})\, x_{ij}$$

$$\begin{tikzcd}
D^3(X) \arrow[r, "D\mu"] \arrow[d, "\mu"'] & D^2X \arrow[d, "\mu"] \\
D^2(X) \arrow[r, "\mu"'] & DX
\end{tikzcd}$$

Let's take something in $D^3(X)$.

$$\mu \cdot \mu \left(\sum_I r_i \sum_J r_{ij} \sum_K r_{ijk}\, x_{ijk} \right)$$

$$= \mu\left(\sum_{I,J} r_i r_{ij} \left(\sum_K r_{ijk}\, x_{ijk} \right) \right)$$

$$= \sum_{I,J,K} (r_i r_{ij} r_{ijk})\, x_{ijk}$$

$$\mu \cdot D\mu \left(\sum_I r_i \sum_J r_{ij} \sum_K r_{ijk}\, x_{ijk} \right)$$

$$= \mu\left(\sum_I r_i\, \mu\left(\sum_J r_{ij} \sum_K r_{ijk}\, x_{ijk} \right)\right)$$

$$= \mu\left(\sum_I r_i \sum_{J,K} (r_{ij} r_{ijk})\, x_{ijk} \right) = \sum_{I,J,K} (r_i r_{ij} r_{ijk})\, x_{ijk}$$

$=$