

# Representação de Conjuntos Nebulosos

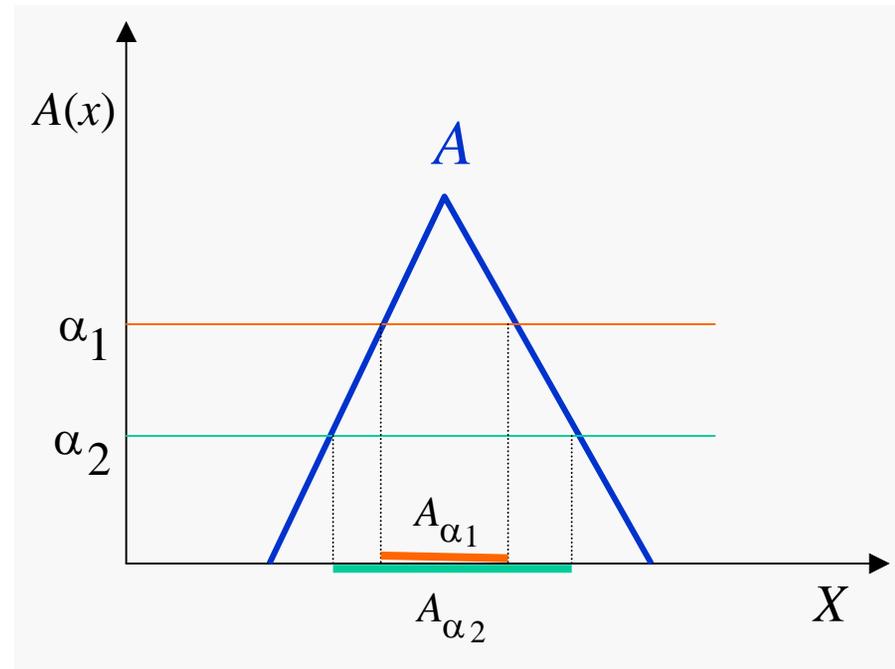
## $\alpha$ -cortes

$$A_{\alpha} = \{x \in X \mid A(x) \geq \alpha\} \quad \text{Fraco}$$

$$A_{\alpha^+} = \{x \in X \mid A(x) > \alpha\} \quad \text{Forte}$$

$$\alpha_1 > \alpha_2 \rightarrow A_{\alpha_1} \subset A_{\alpha_2}$$

$$A_{\alpha^+} \subset A_{\alpha}$$



# Theorema da Representação

$$1 - A = \bigcup_{\alpha \in [0,1]} \alpha \cdot A_{\alpha}$$

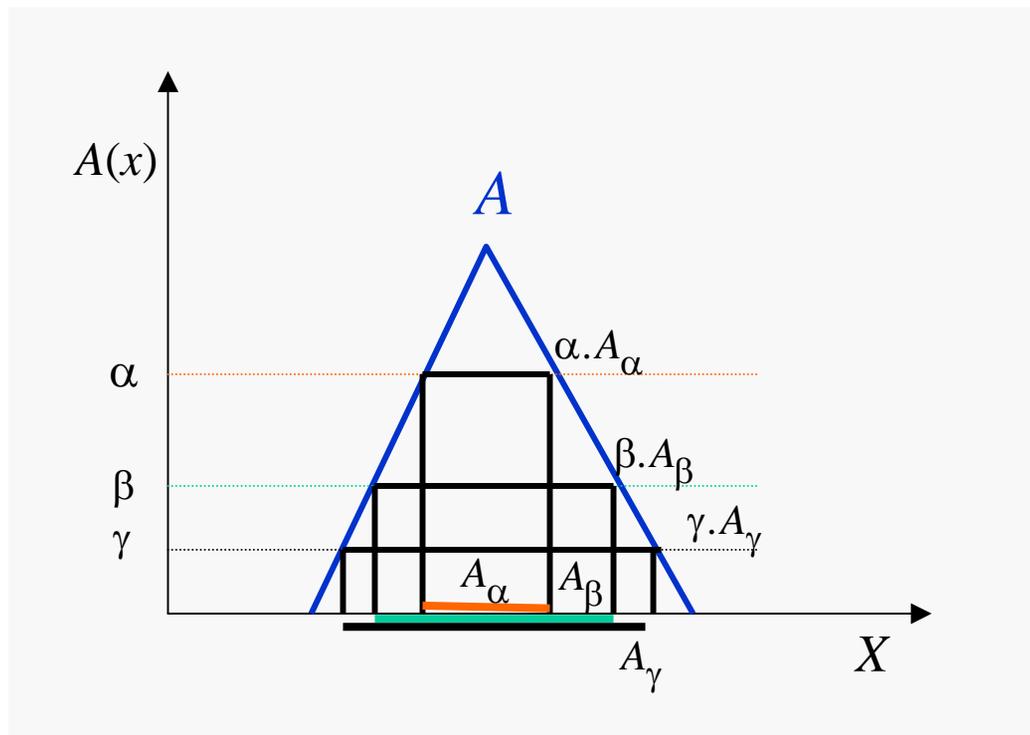
$$2 - A = \bigcup_{\alpha \in [0,1]} \alpha \cdot A_{\alpha^+}$$

$$3 - A = \bigcup_{\alpha \in \Lambda(A)} \alpha \cdot A_{\alpha}$$

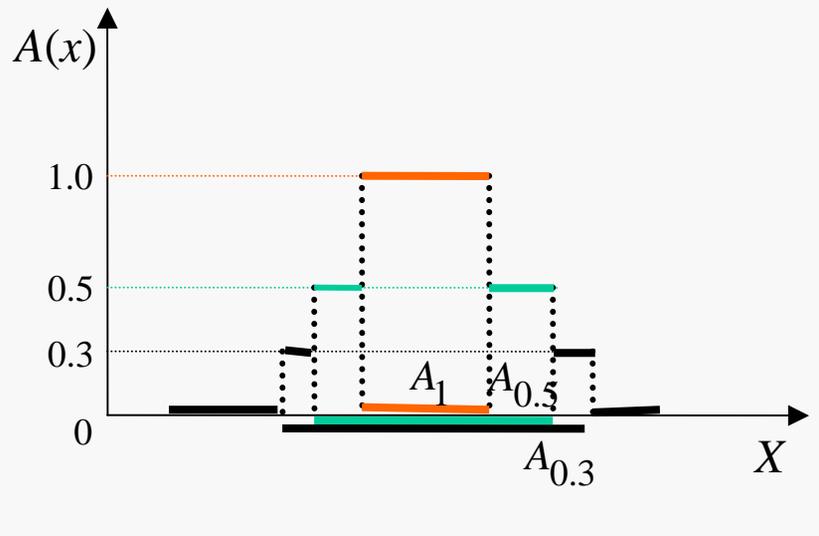
$\Lambda(A)$  = *level set* de  $A$

$\Lambda(A) = \{ \alpha \mid A(x) = \alpha \text{ para algum } x \in X \}$

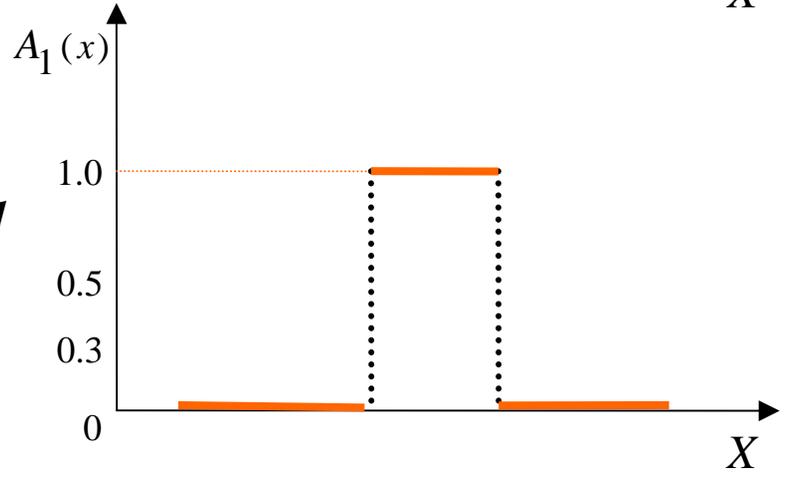
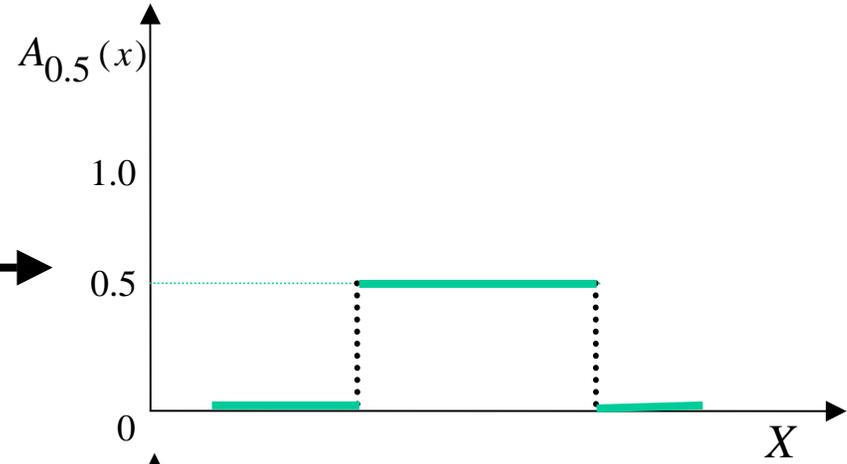
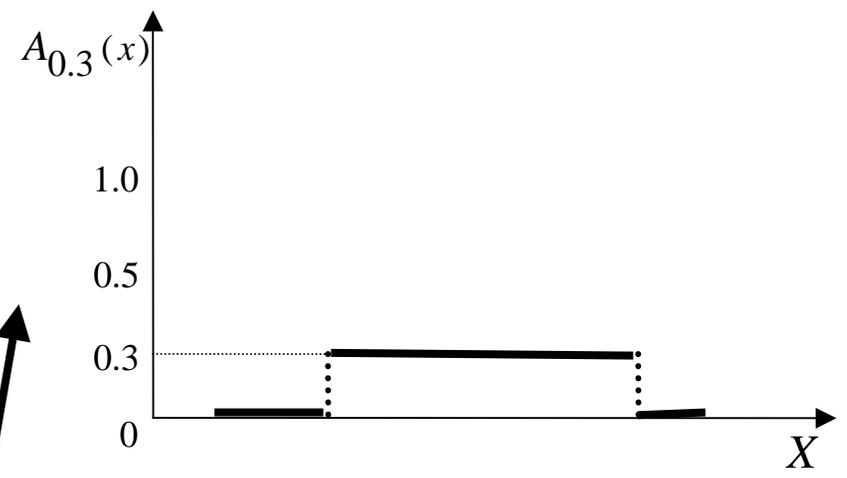
Conjunto de todos níveis  $\alpha \in [0,1]$  que representam cortes- $\alpha$  distintos de um conjunto nebuloso  $A$



$$A = \bigcup_{\alpha \in [0,1]} \alpha.A_\alpha$$



$$A = \bigcup_{\alpha \in \Lambda(A)} \alpha.A_\alpha$$



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