

$$\mathcal{D}_x = \{z \in \mathcal{S}_{k+1} : \|x - z\|_1 = 1\} ,$$

$$\mathcal{A}_y = \{z \in \mathcal{S}_k : \|z - y\|_1 = 1\} ,$$

$$\mathcal{E}_x = \{z \in \mathcal{S}_k : \mathcal{D}_x \cap \mathcal{D}_z \neq \emptyset\} .$$