

## Cantor Space

$$(\mathbb{B}^\omega, d) \text{ with } d(\alpha, \beta) = \begin{cases} 0 & \text{if } \alpha = \beta \\ 2^{-(\min_n \alpha(n) \neq \beta(n))} & \text{else} \end{cases}$$

$\frac{1}{2^n}$ -neighborhood of  $\alpha$ :  $\alpha[0, n] \cdot \mathbb{B}^\omega$

## Cantor Topology

Open Sets:  $\mathcal{O} = \{W \cdot \mathbb{B}^\omega \mid W \subseteq B^*\}$

## Borel Hierarchy

$$\begin{aligned} \Sigma_1 &= \mathcal{O} \\ \Pi_1 &= \mathbb{B}^\omega \setminus \mathcal{O} \\ \Sigma_{n+1} &= \{\bigcup_{i \in \mathbb{N}} L_i \mid L_i \in \Pi_n\} \\ \Pi_{n+1} &= \{\bigcap_{i \in \mathbb{N}} L_i \mid L_i \in \Sigma_n\} \end{aligned}$$