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Covering of a subset of a metric space

Definition. Covering and subcovering

A collection $\{U_i\}_{i \in I} \subseteq 2^M$ of a metric space M **covers** $A \subseteq M$ if

$$A \subseteq \bigcup_{i \in I} U_i$$

If U_i is open for all $i \in I$, then it is an **open covering**.

If $\{V_j\}_{j \in J}$ also covers A and $\{V_j\}_{j \in J} \subset \{U_i\}_{i \in I}$, then $\{V_j\}_{j \in J}$ is a **subcovering** of A .

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