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exhaustion by compact sets

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Let U be an open set in \mathbb{R}^n (or a manifold with countable base). Then there exists a sequence of compact sets K_1, K_2, \dots such that

$$\begin{aligned} K_i &\subseteq \text{int } K_{i+1}, \quad i = 1, 2, \dots, \\ U &= \cup_{i=1}^{\infty} K_i, \end{aligned}$$

where “int” denotes the topological interior. Such a sequence is called an *exhaustion by compact sets* for U .