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Compact Hausdorff spaces

They are of three subclasses

- 2-countable

Corollary: Since

 compact metric space $\implies$ second countable, separable Hausdorff >

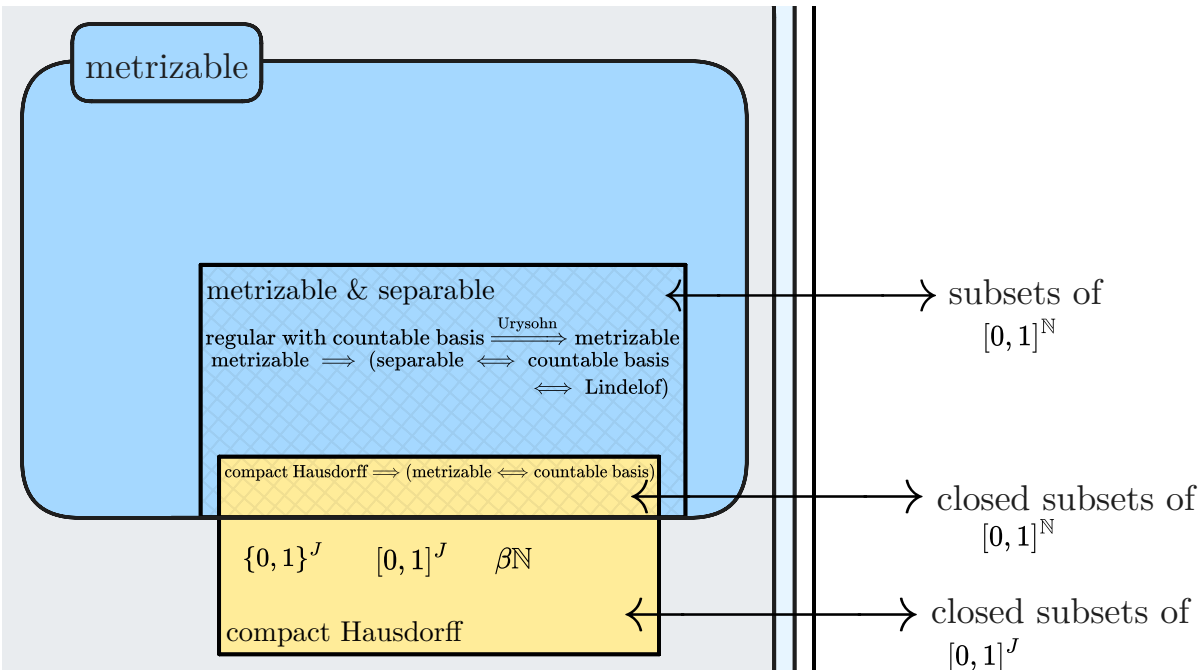
1. <https://planetmath.org/acompactmetricspaceissecondcountable> 

and

(Urysohn metrization theorem) regular space with a countable basis $\implies$ homeomorphic to a subset of $[0,1]^{\mathbb{N}} \implies$ metrizable

This implies: compact Hausdorff space $\implies$ (metrizable $\iff$ it is second-countable).

- not 2-countable $\implies$ non-metrizable
 - separable
 - non-separable



[1]

[2]

[3]

compact Hausdorff non-metrizable separable

- $\beta\mathbb{N}$
- $[0,1]^{\mathbb{R}}$
- $\{0,1\}^{\mathbb{R}}$ [4]

compact Hausdorff non-metrizable non-separable

[5]

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