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Behnke-Stein theorem

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Theorem (Behnke-Stein). *Suppose that $G_k \subset \mathbb{C}^n$ are domains of holomorphy such that $G_k \subset G_j$ whenever $k < j$. Then $\bigcup_{k=1}^{\infty} G_k$ is a domain of holomorphy.*

This is related to the fact that an increasing union of pseudoconvex domains is pseudoconvex and so it can be proven using that fact and the solution of the Levi problem. Though historically this theorem was in fact used to solve the Levi problem.

References

- [1] Steven G. Krantz. , AMS Chelsea Publishing, Providence, Rhode Island, 1992.