

$$\sum_n^{\mathbb{N}} \overline{|\mathbb{L}^n|} < +\infty \quad \xRightarrow{\text{Umordnung}} \quad \sum_n^{\mathbb{N}} \overline{|\mathbb{L}^n|} = \sum_n^{\mathbb{N}} \overline{|\mathbb{L}^{\pi(n)}|}$$

$$\bigwedge_{\varepsilon > 0} \bigvee_{\text{fin } M} \bigwedge_{\text{fin } P} \overline{|\mathbb{L}^P|} \leq \varepsilon \Rightarrow \text{fin } M \cup \pi^{-1} M \subset \mathbb{N}$$

$$M \cup \pi^{-1} M \subset \cdot \subset \mathbb{N} \quad \left\{ \begin{array}{l} N \cap M = M = \pi N \cap M \\ \text{fin } N \perp M \subset \mathbb{N} \perp M \\ \text{fin } \pi N \perp M \subset \mathbb{N} \perp M \end{array} \right.$$

$$\begin{aligned} \overline{|\mathbb{L}^N - \mathbb{L}^{\pi N}|} &= \overline{|\mathbb{L}^N - \pi \mathbb{L}^N|} = \overline{|\mathbb{L}^{N \cap M}(\mathbb{L}^N) + \mathbb{L}^{N \perp M}(\mathbb{L}^N) - \mathbb{L}^{\pi N \cap M}(\mathbb{L}^N) - \pi \mathbb{L}^{N \perp M}(\mathbb{L}^N)|} \\ &= \overline{|\mathbb{L}^{N \perp M}(\mathbb{L}^N) - \pi \mathbb{L}^{N \perp M}(\mathbb{L}^N)|} \leq \overline{|\mathbb{L}^{N \perp M}(\mathbb{L}^N)|} + \overline{|\pi \mathbb{L}^{N \perp M}(\mathbb{L}^N)|} \leq 2\varepsilon \end{aligned}$$