

$${}_n\mathbb{F} \times {}_n\mathbb{F} = \sum_{i+j=n} {}_i\mathbb{F} \times {}_j\mathbb{F}$$

$$\sum_{0 \leq i} \overline{{}_i\mathbb{F}} < \infty$$

$$\sum_{0 \leq j} {}_j\mathbb{F} \rightsquigarrow \sum_{0 \leq i} {}_i\mathbb{F} \times \sum_{0 \leq j} {}_j\mathbb{F} = \sum_{0 \leq n} \sum_{i+j=n} {}_i\mathbb{F} \times {}_j\mathbb{F}$$

$$\sum_{0 \leq i} \overline{{}_i\mathbb{1}} < \infty \Rightarrow \mathbb{1}_n = \sum_{0 \leq i \leq n} \mathbb{1}_i \rightsquigarrow \mathbb{1}_\infty$$

$${}_n\mathbb{1} = \sum_{0 \leq m \leq n} \sum_{i+j=m} {}_i\mathbb{F} \times {}_j\mathbb{F}$$

$$\bigwedge_{\varepsilon > 0} \bigvee_{m \in \mathbb{N}} \bigwedge_{k \geq m} \overline{{}_k\mathbb{F} - \infty\mathbb{F}} \leq \varepsilon \Rightarrow$$

$$\bigwedge_{n \geq m} \overline{{}_n\mathbb{1} - {}_n\mathbb{F} \times \infty\mathbb{F}} = \overline{\sum_{0 \leq k \leq n} \sum_{0 \leq j \leq k} {}_{n-k}\mathbb{F} \times {}_j\mathbb{F} - \sum_{0 \leq k \leq n} {}_{n-k}\mathbb{F} \times \infty\mathbb{F}} = \overline{\sum_{0 \leq k \leq n} {}_{n-k}\mathbb{F} \times ({}_k\mathbb{F} - \infty\mathbb{F})}$$

$$\leq \sum_k^m \overline{{}_{n-k}\mathbb{F} \times ({}_k\mathbb{F} - \infty\mathbb{F})} + \sum_{m \leq k \leq n} \overline{{}_{n-k}\mathbb{F} \times ({}_k\mathbb{F} - \infty\mathbb{F})} \leq \varepsilon \left( 1 + \sum_{0 \leq i} \overline{{}_i\mathbb{F}} \right) \Rightarrow {}_n\mathbb{1} \rightsquigarrow \infty\mathbb{F} \times \infty\mathbb{F}$$

$$\sum_{0 \leq i} \overline{{}_i\mathbb{1}} < \infty \Rightarrow \sum_{0 \leq k \leq n} \sum_{i+j=k} \overline{{}_i\mathbb{F} \times {}_j\mathbb{F}} \leq \sum_{0 \leq k \leq n} \sum_{i+j=k} \overline{{}_i\mathbb{F}} \overline{{}_j\mathbb{F}} \rightsquigarrow$$

$$\sum_{0 \leq i} \overline{{}_i\mathbb{F}} \sum_{0 \leq j} \overline{{}_j\mathbb{F}} < \infty$$