

$$\mathcal{L}_\infty \implies \mathcal{L}_p \implies \mathcal{L}_{p'}, \, p' \in [1, p)$$

$$\Downarrow$$

$$\text{a.s.} \implies \mathbf{p} \implies \mathbf{d} \implies \varphi \text{ (pointwise)}$$

$$\Downarrow$$

$$\text{a.s. } (\overset{d}{\sim})$$