triangular array
~~vector of residuals~~

$$\mathbb{E}[h(\tilde{G}_N) \mid R]$$

So have

$$\sup_{h \in B} \left| \mathbb{E}[h(\tilde{G}_N) \mid R] - \mathbb{E}[h(\tilde{G}) \mid R] \right| \xrightarrow{a.s} 0$$

$\Updownarrow$ using standard a.s. def^n

Then ~~$\forall \omega \in \Omega$,~~ for ~~as~~ a.a $\omega \in \Omega$.

$$\sup_{h \in B} \left| \mathbb{E}[h(\tilde{G}_N) \mid R(\omega)] - \mathbb{E}[h(\tilde{G}) \mid R(\omega)] \right| \to 0$$

i.e $$\sup_{h \in B} \left| \mu_{R(\omega)}(h(\tilde{G}_N)) - \mu_{R(\omega)}(h(\tilde{G})) \right| \to 0$$

where $\forall y \in Im(R)$ ~~$\mu_y(A$~~ μ_y is the

~~measure $\mu_y(A) = \int 1_A \, p(x|y) \, dx$~~

$\mu_{R(\omega)}$ is a measure so it follows that

$$\tilde{G}_N \xrightarrow[\mu_{R(\omega)}]{} \tilde{G} \quad \text{i.e. } \forall f \in C_b(\mathbb{D}),$$

$$\mu_{R(\omega)}(f(\tilde{G}_N)) \to \mu_{R(\omega)}(f(\tilde{G})) \text{ as } N \to \infty$$