$\|x-y\| \le \delta\sqrt{2}$

want 2 show that

$$\mathbb{P}(\exists t \in d_0,\ t \in \Upsilon_r^z,\ S^z(t) > u)$$

$$\approx \mathbb{P}(\underbrace{\exists t \in d_0,\ t \in \Upsilon_r^z}_{\text{call this } A_t},\ S^z(t_0) > u)$$

& Assume $\exists C$ s.t. $C < \infty$ s.t. $|\cancel{s}\, s(x) - s(y)| \le C|x-y|$

Then $\cancel{\forall \varepsilon > 0}$, If $|t - t_0| < \delta$

~~$\mathbb{P}(A_t, s(t) >$~~ Then $|s(t) - s(t_0)| < C\delta$

~~So $\forall \varepsilon > 0$~~, For $\varepsilon > 0$, let $B_\varepsilon(\delta) = \{C\delta < \varepsilon\}$

on $B_\varepsilon(\delta)$, $|s(t) - s(t_0)| < \varepsilon$

Now, $\mathbb{P}(A_t(\delta), s(t) > u + \varepsilon)$

$$\le \mathbb{P}(A_t(\delta), s(t) > u + \varepsilon, B_\varepsilon(\delta)) + \mathbb{P}(B_\varepsilon(\delta)^c)$$

$$\le \mathbb{P}(A_t(\delta), s(t_0) > u) + \mathbb{P}(B_\varepsilon(\delta)^c)$$

$$\le \mathbb{P}(A_t(\delta), s(t) > u - \varepsilon) + 2\,\mathbb{P}(B_\varepsilon(\delta)^c)$$

Take ~~a sequence of ε, $\varepsilon_n = \frac{1}{n}$~~, chose δ_n s.t.

Hence $\mathbb{P}(C\delta_n \ge \varepsilon_n) \cancel{> 1/n} < \frac{(C\delta)^k}{\varepsilon^k}$

take the limit as $n \to \infty$ then have.

~~Cont~~ Take limit then Centre in equality is the LHS (independent of δ!) and RHS is the lower & upper limits.