$$\sup_{t\in B_0(h)} \left| Y(t/\sqrt{v}) - Y(0) - \frac{t^T\nabla Y(0)}{\sqrt{v}} - \frac{1}{2}t^T \frac{\nabla^2 Y(0)}{v} t \right|$$ (4)

$$= \sup_{\substack{\cancel{t\in B_0(h)} \\ B_h(0)}} \left| \sum_l \sum_{ijk} t_i^* t_j^* t_k^* . \nabla^3 K(t^*)_{ijk} X(l) \right|$$

some $t^* \in B_0(\|t/\sqrt{v}\|)$

check remainder!

p: polynomial in arguments of $|t^*|$ abs not norm!

$$\le \sum_l \cancel{p(|t^*|)} |X(l)| \underbrace{\sup_{\substack{ijk \\ s\in B(h/\sqrt{v})}} |\nabla^3 K(s)_{ijk}|}_{} \underbrace{\sup_{t\in B_0(h)} p(|t^*(t)|)}$$

bounded as $\nabla^3 K$ cts on a compact set ie $\le M$.

$\le \|t/\sqrt{v}\|^{3/2}$ ~~pts on compact set $\Rightarrow$ this is $\le M_2$.~~

$$\le \cancel{M_2} M_1 \sum_l |X(l)| \cancel{\|t/\sqrt{v}\|^{3/2}} \times h^{3/2}/v^{3/4}.$$

So $$\mathbb{P}\Big(\sup_{\substack{\cancel{t\in B_0(h)} \\ B_h(0)}} \left| Y(t/\sqrt{v}) - Y(0) - \frac{t^T\nabla Y(0)}{\sqrt{v}} - \frac{1}{2}t^T \frac{\nabla^2 Y(0)}{v} t \right| > u/3,$$

$$\mathcal{M}(B_r(0)),\ Y(0) > v \Big)$$

$$\le \mathbb{P}\left(M_1 \sum_l |X(l)| \frac{h^{3/2}}{v^{3/4}} > u/3,\ \mathcal{M}(B_r(0)),\ Y(0) > v \right)$$