BRITISH EMBASSY
BELGRADE

$$= \int_{T_1} \int_{T_2} \int_{\mathcal{N} \longleftrightarrow \times B_1 \times B_2} |\det \nabla y_1| \, |\det \nabla y_2| \, p_{t_1,t_2}(\nabla y_1, \nabla y_2, V_1, V_2) \; d\!\longleftrightarrow$$

need to use Lebesgue's cty theorem here need to check it works in 2D here!

$$\int_{\mathbb{R}^N \times \mathbb{R}^N} \delta_\varepsilon(x_1)\, \delta_\varepsilon(x_2)\, p_{t_1 t_2}(x_1, x_2 \mid V_1, V_2, \nabla y_1, \nabla y_2)\, dx_1 dx_2$$

$p_{t_1 t_2}(x_1, x_2 \mid V_1, V_2)$ assumed to be cts and bounded

so this integral

note not bounded necessarily!

converges to:

$$p_{t_1 t_2}(0, 0 \mid V_1, V_2, \nabla y_1, \nabla y_2)$$

need to assume this only only if not on the same set!

by Lebesgue's cty thm (since δ_ε has been normalized!)

as $\varepsilon \to 0$

Need moments here

Also, this int is $\leq \sup_{x_1, x_2} p_{t_1 t_2}(x_1, x_2 \mid \nabla y_1, \nabla y_2, V_1, V_2)$

which is bounded (by assumption)

this ~~may~~ is ~~to diffic~~ difficult ~~to show~~

if N=M or you're on similar neighbourhoods as have a diagonals problem.

(okay if you're on separate neighbourhoods as there ~~is~~ then a valid joint distribn)

Look at Klenke!