OTHER VERSIONS OF (SCP)

[Kapitanskii – Ladyzhenskaya '84]

basic assumptions : $\mathcal{M} := V$ complete top. vector space, Hausdorff

$G :=$ set , $\tau_g \in L(V,V)$ $\forall g \in G$

$X \subset V$ G-invariant set

$T_v X :=$ set of $\phi'(0^+)$ for $\phi : [0,\varepsilon) \to X$, $\phi(0) = v$

$N \subset T_v X$ linear , G-invariant , dense

$N \cap T_v(X \cap \Sigma)$ dense in $T_v(X \cap \Sigma)$

$$\delta f(v,u) := \lim_{t \downarrow 0} \frac{f(\phi(t)) - f(v)}{t} \quad \forall u \in N$$

$(\phi(0) = v, \ \phi'(0^+) = u)$

and more conditions
$\rightsquigarrow$ (SCP)

(applied to nonlinear PDE : $-\Delta u + u - \lambda u |u|^{p-2} = 0$
or to find critical pts $\phi : \mathbb{R}^3 \longrightarrow \mathbb{S}^3$
w/ $\deg(\phi \circ \pi_{st}) = 1$ of

$$f(\phi) := \int c |\nabla \phi|^2 + \frac{1}{2} \sum^{3} |\partial \phi \wedge \partial \phi|^2$$

$$f(\phi) := \int_{\mathbb{R}^3} c|\nabla\phi|^2 + \frac{1}{2}\sum_{k,l=1}^{3} |\partial_l \phi \wedge \partial_k \phi|^2$$

(skyrmions))

[Kobayashi-Otani '04] [Krystek, Varga, Varga '07]

[Squassina '11] nonsmooth (SCP)

(e.g. for $f = f_1 + f_2$

$C^{0,1}_{loc}$ convex, proper, l.s.c.

uses DeGiovanni-calculus)