AREA FORMULA

1st Variation formula

$\int \mathrm{div}_M X \, d\mu_M = -\int X \cdot \underline{\underline{H}} \, d\mu_V$

$\int \nabla^M x^{n+j} \cdot \nabla^M \zeta \, d\mu =$

$= -\int_M e_{n+j} \cdot \underline{\underline{H}} \, \zeta \, d\mu$

(7) on p. 115

$\mathcal{H}^n(\mathrm{graph}(f) \setminus \mathrm{spt} V) \le$

$\le c\, l^{-2n-2} E$

Thm 20.2 LIPSCHITZ-APPROX

If $E = \int \|p_* - p\| + \dots$

Then $\exists f \in C^{0,1}$ s.t.

$\mathrm{Lip}(f) \le l$

$\mathcal{H}^n(\mathrm{graph}(f) \setminus \mathrm{spt}(V)) + \mathcal{H}^n(\mathrm{spt}(V) \setminus \mathrm{graph}(f))$
$\le c\, l^{-2n-2} E$.

$\mathcal{H}^n(\mathrm{spt}\, V \setminus \mathrm{graph}(f)) \le$

$\le c\, l^{-2n-2} E$

$\left| \int \nabla f \cdot \nabla \zeta \right| \le \cancel{\delta}$

$\le c \sqrt{\varepsilon}\, E_*^{\frac{1}{2}} \sup |\nabla \zeta|$

(12) on p 118

Thm 23.1

$E_*(\zeta, \rho, T) \le \varepsilon \le \varepsilon_0$

$\mu(B_\rho) \le \omega_n \rho^n (1+\delta)$

$\Longrightarrow \begin{cases} \exists u \in C^{1,1-n/p} \\ \mathrm{graph}(u) = V \end{cases}$

$\frac{1}{(\eta\rho)} \int_{B_{\eta\rho/2}(\tau)} \mathrm{dist}(x-\tau, S)^2 \, d\mu \le c\, E_*$

(23) on p. 119

Lemma 21.1 Harmonic Approx Lemma

If $\int |\nabla f|^2 \le 1$, $\left| \int \nabla f \cdot \nabla \varphi \right| \le \delta \sup |\nabla \varphi|$

Then $\exists u$ s.t. $\Delta u = 0$, $\int |\nabla u|^2 \le 1$

and $\int (u-f)^2 \le \varepsilon$

$\Delta u = 0$ in B_1

$\Longrightarrow \sup_{B_\eta} |u - u(0) - \nabla u(0) \cdot x| \le$

$\le c \eta^2 \|Du\|_{L^2}$

Thm 22.5

$E_*(\zeta, \eta\rho, S) \le \eta^{2(1-n/p)} E_*(\zeta, \rho, T)$

$|S - T| \le c E_*$

(9) on p 123

$E_*(\zeta, \eta^k \rho, T_k) \le \eta^{2k(1-n/p)} E_*(\zeta, \rho, T)$

$\Longrightarrow |T_k - T| \le \sum E_*(\zeta, \eta^j \rho) \le c \sum \eta^{2j(1-n/p)}$

$\le c$

Iteration

1st Variation

choose $X = \zeta^2 X'$

Lemma 22.2

$E(\zeta, \rho/2, T) \le$

$\le c\left(\int \mathrm{dist}(\cdot)^2 + \int |H|^2 \right)$