GEOMETRIC MEASURE THEORY

HOMEWORK

Problem: Let $\{E_k\}_k$ and E be sets of locally finite perimeter in $\mathbb{R}^n$. Assume that

$$\nu_{E_k}\|\partial E_k\| \rightharpoonup \nu_E\|\partial E\|,$$

and that there exists a sequence $\{r_i\}_i$ such that $r_i \to \infty$ as $i \to \infty$, and $\forall i \in \mathbb{N}$

$$\lim_{k\to\infty} P(E_k; B_{r_i}) = P(E; B_{r_i}).$$

Show that

$$\|\partial E_k\| \rightharpoonup \|\partial E\|.$$