$$\{ \exists t \in T \text{ s.t } \nabla Y(t) = 0,\ \nabla Y < 0 \}$$

$$= \{ \omega : \exists \nabla Y(t,\omega) = 0,\ \nabla Y(t,\omega) < 0 \}$$

$$P(M_\varepsilon \geq 1) = \sum_{j=1}^{\infty} \mathbb{1}[M = j]$$

$$\sum^{M_i(D)} \mathbb{1}[A_{t_j}]$$

denom is $P(M_u \geq 1)$

count

$$\lim_{\varepsilon \to 0} \frac{P(M_\varepsilon \geq 1)}{P(M_u \geq 1)}$$

in this event $\mathbb{1}[A_{t_j}] = \mathbb{1}[A_{t_0}]$

$$\mathbb{E}\left[\mathbb{1}[A_{t_j}] - \mathbb{1}[A_{t_0}] \right]$$

$$= \mathbb{E}\left[\left(\mathbb{1}[A_{t_j}] - \mathbb{1}[A_{t_0}] \right) \times \left[\mathbb{1}[\exists \leq 1 \text{ cluster } \cancel{\text{ }} \text{ in } B_\varepsilon] + \mathbb{1}[\exists > 1 \text{ cluster in } B_\varepsilon] \right] \right]$$

$$= \mathbb{E}\left[\left(\mathbb{1}[A_{t_j}] - \mathbb{1}[A_{t_0}] \right) \times \mathbb{1}[\exists \leq 1 \text{ cluster in } B_\varepsilon] \right] = 0!$$

$$+ \mathbb{E}\left[\left(\mathbb{1}[A_{t_j}] - \mathbb{1}[A_{t_0}] \right) \times \mathbb{1}[\exists > 1 \text{ cluster in } B_\varepsilon] \right]$$

$P(M_u > 1) \leq \mathbb{E} M_u \to 0$

has low probability

$$\leq 2P(\exists > 1 \text{ cluster in } B_\varepsilon) \to$$

as # of clusters is $\leq$ # of peaks eig.