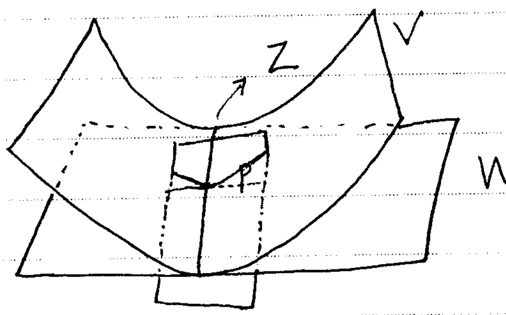
$\text{mult}_p((V\cap H)\cdot(W\cap H))_H$ is independent of the choice of generic points of Z and the choice of submanifolds in some nbd intersecting Z transversely.

In case $\dim V = k$. $\dim W = n-k$ and $V\cap W = \{p\}$. $\Rightarrow$ We choose a nbd of p as a submanifold intersecting p transversely at p. $\Rightarrow$ Everything fits well.

Suppose H' is a submanifold in a nbd of p transversely at p. $\Rightarrow$ Locally, H' is homotopic to H, in other words, $\exists$ a family of smooth submanifolds in a nbd of p H_t where $0\le t\le 1$, s.t $H_0 = H'$ & $H_1 = H$. $H_t \ni p$.

$\Rightarrow$ $\text{mult}_p((V\cap H)\cdot(W\cap H))_H$ is independent of the choice of a submanifold H.



Given $p_1, p_2 \in Z^*$, then, since Z is irreducible, Z^* is connected. $\Rightarrow$ Z^* is path-connected. $\Rightarrow$ $\exists$ a path $\alpha : I \longrightarrow Z^*$ s.t $\alpha(0)=p_1$, $\alpha(1)=p_2$. We may choose α to be smooth. $\Rightarrow$ By tube lemma, $\exists$ a tube T containing $\alpha(I)$. $\Rightarrow$ If H_1 & H_2 are submanifolds in nbds of p_1 & p_2 respectively, then T