iety of Δ', the varieties V and $W+\epsilon$ will meet transversely in μ points in Δ'. The number μ is called the intersection multiplicity of V and W at 0 and is written

$$\mu = m_0(V \cdot W).$$

「 $\tilde{V} \cap \tilde{W}$

$= V \times \Delta' \cap \{(z,w) : z-w \in W\} \ni (x,y)$

$\Rightarrow x \in V, \quad x-y \in W.$

$\Rightarrow x$ varies over V of dim k. and for each $x \in V$, $\{y \in x - W.\}$ has dimension $n-k$

$\Rightarrow \tilde{V} \cap \tilde{W}$ has dimension $n = k + n-k$.

① $\pi_2 : \tilde{V} \cap \tilde{W} \longrightarrow \Delta'$ is proper

For, $\pi_2^{-1}(0) \cap \tilde{V} \cap \tilde{W} = V \times \{0\} \cap W \times \{0\} = V \cap W \times \{0\}$

$= \{(0,0)\}. \Rightarrow$ A point set.

$\Rightarrow$ For a small nbd N of $(0,0)$, $\pi_2^{-1}(\epsilon) \cap \tilde{V} \cap \tilde{W}$ is a set of discrete points, $\epsilon \in N$. For such nbd, see P68. The Transversality Theorem (Differential Topology by V. Guillemin).

② $\pi_2 : \tilde{V} \cap \tilde{W} \longrightarrow \Delta'$ has the Jacobian of rank n for generic points, since any $n \times n$ minor matrix of

$$\begin{array}{c|c} & 2n \\ \hline n & \left(\begin{array}{cc} \frac{\partial (\pi_2)_1}{\partial z} & \cdots \\ & \\ & \end{array} \right) \end{array}.$$

$\Rightarrow$ For generic points, by the inverse function theorem, π_2 is a finite-sheeted covering map.