in the elementary invariant polynomial P^i,

$$\sum_{v(p)=0} \frac{P(A_p)}{\det(A_p)} = Q(c_1(M), \cdots c_n(M)).$$

Proof.* The outline of the proof is this: "we choose a metric in $T'(M)$ that is Euclidean in a nbd of the zeros $\{p_\nu\}$ of v, and let Θ be the curvature matrix of the metric connection on $T'(M)$.
Then

$$\Theta \equiv 0$$

in a ball $B_\epsilon(p_\nu)$ around each p_ν.

⌜ $p_\nu \in U_\nu \subset M$ $\quad T'(U_\nu) \cong U_\nu \times \mathbb{C}^n$

$$\begin{array}{ccc} \mathcal{Q}^0(T'(U_\nu)) & \xrightarrow{D} & \mathcal{Q}^1(T'(U_\nu)) \\ \updownarrow\cong & & \updownarrow\cong \\ \mathcal{Q}^0(U_\nu \times \mathbb{C}^n) & \xrightarrow{\nabla} & \mathcal{Q}^1(U_\nu \times \mathbb{C}^n) \end{array}$$

D → the corresponding connection to ∇

∇ ↑ natural standard

by uniqueness of the metric connection

$$e_1, \cdots e_n \quad \Rightarrow \quad \nabla e_i = 0 \iff D e_i = 0$$

$$\Rightarrow \quad D^2 = \Theta = 0$$ ⌟

We will construct a C^∞ $(n, n-1)$ form Λ on $M^* = M - \{p_\nu\}$ such that

$$d\Lambda = \bar{\partial}\Lambda = P(\Theta);$$

we will then have

$$\int_M P\left(\frac{\sqrt{-1}}{2\pi}\Theta\right) = \int_{M - \cup B_\epsilon(p_\nu)} P\left(\frac{\sqrt{-1}}{2\pi}\Theta\right)$$