To compute $\eta_\Delta^\circ(\Gamma_f)$, then, we need only smooth the current T_Δ° – that is, solve the equation of currents

$$(*) \qquad T_\Delta^\circ = \varphi + \bar\partial k$$

with k any $(n, n-1)$-current on $M \times M$ and φ a smooth form; we will then have

$$\eta_\Delta^\circ(\Gamma_f) = \int_{\Gamma_f} \varphi .$$

⌈ We want a smooth part φ.

$$\Rightarrow \eta_\Delta^\circ(\Gamma_f) = \int_{\Gamma_f} \varphi_\Delta^\circ = \int_{M\times M} \eta_{\Gamma_f} \wedge \varphi_\Delta^\circ = T_\Delta^\circ(\eta_{\Gamma_f})$$

$$= \int_{M\times M} \varphi \wedge \eta_{\Gamma_f} + \bar\partial k(\underbrace{\cancel{\eta_{\Gamma_f}}}_{(-1)^\circ k(d\cancel{\eta_{\Gamma_f}})}) = \int_{M\times M} \varphi \wedge \eta_{\Gamma_f} = \int_{M\times M} \eta_{\Gamma_f} \wedge \varphi$$

$$= \int_{\Gamma_f} \varphi .$$

⌋

In fact, as we will see, it will suffice just to solve the equation $(*)$ locally around the fixed points. We proceed as follows.

⌈ Since the coarser direct-sum decomposition commutes with $\bar\partial$,

$$H_{\bar\partial}^{n,n}(M\times M) = H_{\bar\partial}^{(0,*),(n,n-*)}(M\times M) \oplus H_{\bar\partial}^{(1,*),(n-1,n-*)}(M\times M) \oplus \cdots \oplus H_{\bar\partial}^{(n,*),(0,n-*)}(M\times M).$$

Since $H_{\bar\partial}^{n,n}(M\times M) \cong H^n(\mathcal{D}^{n,*}, \bar\partial)$, we can define the component of bitype $(p,*)(n-p, n-*)$. $\Rightarrow$ We have T_Δ° as the component

MOOKEUK CO.