$\dim \{f_1 = \cdots = f_n = 0\} = 0 \Rightarrow \mathbb{Z}$ is a finite set of points.

Thus locally $I = \{f_1, \cdots f_n\}$, where $n = \dim_{\mathbb{C}} M$. Setting $\mathcal{O}_{\mathbb{Z}} = \mathcal{O}/I$ the ringed space $(\mathbb{Z}, \mathcal{O}_{\mathbb{Z}})$ consists of the points $p \in \mathbb{Z}$ together with a finite-dimensional $\mathbb{C}$-algebra $\mathcal{O}_{\mathbb{Z},p} = \mathcal{O}_p / I_p$. The associated zero-cycle is $\sum_{p \in \mathbb{Z}} \dim_{\mathbb{C}} (\mathcal{O}_{\mathbb{Z},p}) \cdot p$. The space $(\mathbb{Z}, \mathcal{O}_{\mathbb{Z}})$ contans more information than just the set of points $p \in \mathbb{Z}$, even if we include the multiplicities $\dim_{\mathbb{C}}(\mathcal{O}_{\mathbb{Z},p})$.

If $p \in \mathbb{Z}$, $\mathcal{O}_p \neq I_p$. $\Rightarrow \dim_{\mathbb{C}} \mathcal{O}_p/I_p \neq 0$. If $p \notin \mathbb{Z}$, $\mathcal{O}_p = I_p \Rightarrow \dim_{\mathbb{C}} \mathcal{O}_p/I_p = 0$. $\Rightarrow$ The associcted zero cycle is $\sum_{p \in \mathbb{Z}} \dim_{\mathbb{C}}(\mathcal{O}_{\mathbb{Z},p}) \cdot p$, where $\dim_{\mathbb{C}}(\mathcal{O}_{\mathbb{Z},p})$ = degree of the map $f = (f_1, \cdots f_n) : \underset{p}{\overset{\psi}{U_p}} \longrightarrow \mathbb{C}^n$, see P667 ~ P668

Now we come to the questron of sheafifying Ext and Tor. Recall from the section on homological algebra that we proved a proposition giving four properties of projective resolutions of $\mathcal{O}_z$-modules. The definition and basic properties of Ext and Tor for modules over local rings were formal consequences of this proposition. The point we wish to make here is this: By the propagation principle, the same four properties in that proposition are valid locally for coherent sheaves. For example, the first one, that projective resolutions exist, becomes that local syzygies exist, which we have alrea