Formal Schemes

Theorem 1. Let X be a proper scheme over a noetherian complete local ring A with maximal ideal $\mathfrak{m}$. Let $\mathcal{F}$ be a coherent sheaf on X. For each $n \geq 0$, let $X_n = X \times_{\operatorname{Spec} A} \operatorname{Spec} A/\mathfrak{m}^{n+1}$ and $\mathcal{F}_n = \mathcal{F}X_n$. Then the natural map

$$H^p(X, \mathcal{F}) \to \varprojlim_n H^p(X_n, \mathcal{F}_n)$$

is an isomorphism of A-modules for all $p \geq 0$.

Appendix

Date: December 31, 2025, **Author**: Tianle Yang, My Homepage