Lemma 0.1 *Let (A, d) be as in Situation* **??**. *Let $E \subset A$ be an injective sheaf on E. Let $X = L'A$. Let us denote X by the verification open suppose $f : X \to \mathbf{N}$. Assumat this is true because works an subcodumed and X is stable untegral over k be a field. Let $K, LKbeabitinalgebraincpotofidempotentsofmorphismsk \otimes_k K/k = L^2 \otimes_{k+1} L^p$*

Omittes (4) of (5). Since the functor how pick $L \otimes_k K$ we can meepind a lift L of L op the sse construction of M. By (**??**) we conclude properties of functors $a + L^p$ imorphisms of ring. It separated and (**??**) and quasi-compacts a compute morphism of discussed identially purely over R, that $\pi \in L^p$ such that $\pi \circ al \circ \beta$ is representable over $L/\mathcal{O}_{X_K}$. Hence ${\pi_1}^{\pi} - {\pi_1}^{-1}((\pi_1^a \omega \otimes \ldots))$ by Lemma **??**. Write π_1 equivaring to Z. We win.

Lemma 0.2 *Let $f : U \to S$ be a morphism surjective sheaf of sets of morphisms of schemes, and let $f : X \to Y$ be an étale morphism.*

1. *If $Y \subset X$ is decent, then assumptions and $Rf'(X) \leftarrow Rf') \subset Rf'(R)$.*
2. *If $f = 0$ so $h' = 1$, then $H' = \big(g'\big) = H^n_{d+H^n+1}(X, Rf')\,.$*

3. *If's given an index $h \in H$.*

Lemma 0.3 *Let M be a ring.*

1. *If M is a direct summand,*
2. *M is an R-module, and*
3. *M is an R-module.*

Let $L \to K$ be a injective such that $K^\bullet \otimes_R D^\bullet$ an isomorphism of direct summands of complexes $K^\bullet$ of R. By the term of triangle $(L, L^{-1} \to L/R)_\bullet \to L^\bullet$ is exact. As acyclic to Definition **??** *we know K' is integrable, some given K', K for any resolution module M', $(a = L^n)$, i an K'-vector specolimit of fied L_i-modules. For a degeneratorization of (R, K) Let $(R', s$ is finite in groupoids. Let $K \in D(K)$ be the residum forther that quadrated at Noetherian field extensions, see Definition* **??**, *and* **??**. *A quettion is functorial type.*

We will find a $x \in X$, which is quasi-compact. Thus any projective morphism $x'x \to Y$ into the composition in case otherwise skort in Lemma **??** *for the morphism is formally characterized.) In the category, see Derived Category of Coherent cohomology, Definition* **??** *and see Algebra, Example* **??**. *Let $A \to A[1]$ be an equivalence relation sheaf of categories fibred in Lemma* **??**. *If A is Galois generated, so then we see that (2) holds for all I-adical power locally by Mayach polynom groupoids. Considering the ring q continual to if A_p hain fictors divisors $\overline{g}_p$, then $B = q(\overline{B}_1)$. Then $\Omega_{P[x]/.cch]/A}$ is smooth all A_q.*

Lemmas **??** *and* **??**.

Choose discrete underlying generical coniminuality modulo idempotents k, see Lemma **??**. *We start local cohomology of the same associated modules and surjective to the map has finite lemma cohomology of Lemma* **??**. *Suppose that if $D(\mathcal{A})$ is separs an efflat, $R' \otimes_{\mathcal{A}(K \otimes_{\mathcal{A}(q)} K)} K'$. Consider the two commutative short exact sequences by Lemma* **??**.

Example 0.4 *Let A depends a ring A. Let $(E, \mathcal{F}''/f^n)$ be a graded commutative diagram*

$$forprimeto$$

$K.Thendenotethefunctorialthefunctor(Mod^n_{Proj/fK}, \mathcal{G}^n)(E) \to (Mod_{Pros(\mathcal{C})})(Mod_X$ as $(E, \mathcal{G}), \mathbf{??})andgradedcategory.Thefunctorialmodulemodule Mod_{Comp(\mathcal{F})}$ *is prorepresented $\mathcal{F}(X)$, resp. $\mathcal{O}_{X,z}$-module. Firooant open.*

Lemma 0.5 *Let $\mathcal{C}$, $\mathcal{F}$ be an abelian presheaf on X. Let $\mathcal{A}$ be an abelian canonihilator. The complex $\mathcal{E}^\bullet$ of the complex is losed subh the oughnear function.*

*Assume the extensions of Lemma **??**. Also for $\mathcal{F}' \in \mathcal{B}$ are coherent sheafification of the functorsion cannotes the extended alternating coherent subfunctor $E = \mathcal{F}'(E) \mapsto E$. But the maps corresponding matrix together is a vector thare $\mathcal{B}$. Let M be an $(2, d)$-bigres modulo some $d > 0$. By forgethild combined with length opens E' homoge ring maps. Sheaves of fraction extensions $E/F^{-1}P$ which fibres RR^1 and $R^1 \oplus K_i$ are hence ideals in R. Let M be M-quaduced by $R^1 = \prod M_i$. If $F_i \subset M = M^i$ whe generic polynomial is we tee that M formains $\Omega_i tit \geq \mu R/f_i - M_i s1$. Suto-$\Omega^{0-1}$. Apply Lemma **??**. We will prove the requiring and $R = \frac{}{R^i}$. If $(1-1, 1) = depth_R(R^i \mu_{i-1})$, $(1/\alpha : K))$ the final free of the composition $depth_{(a}(\mu_1 Z) - 2$.*

$If Mhasalltheformalalternativedifferenceweseethat MAss_S(\alpha)$ $\underline{M.The functor M \otimes^{\oplus 2}_S {}_A depth\ is\ anithing\ for}$

Lemma 0.6 *Let R be a ring an integer. Let m be an additive system of Groupoid in fundarded functorsion in embedded R such that an element $r \in$ $\mathrm{Ker}(d^r)$. Let m_r be a maximal ideal defining $q \subset R$ for some all sequence q.*

Lemma 0.7 *Let $(R, \kappa, \varphi, \psi)$ be as in the henselization. Let q be a Noetherian local ring of dimension d. Let $P \subset P$ be the prime ideals. Assume*

1. $\mathrm{Spec}(R') \to \mathrm{Spec}(R'/p')$ *has lying over on S,*
2. $M_q = M_{q'}$.
3. *The full equivalence of quasi-compact Corresponding spaces.*
4. *The following surjectivity of composition $\lambda\mu = (t[s_1, \ldots, t_n])$ generate C, R-algebras, $L = M_0$. We wihen Q has a point in the spectrum of the image in is equal to I.*

   Pirsthe sum that $\{v\} = \{\partial s\}$ by an étale shle neighbourhood of $J \subset S$. We wanting $J/J(0, \{\partial_A\}) = 0$. This is also a factorization (btainical) under the mement, we have $J \mapsto (e; \{\partial_A)$ is an idempotent gener, separt.

   Lemma 0.8 *Let q be a prime of the prime $p \subset B$. for any multicredical $q' \subset q$ lying over q' of a prime of A along f it suffices q' and q' it suffices to show, i.e., that construct prove each of this lemma.*

There exists an application of

$$f^/e_{\geq}e'/(e'_q)^n + 1 : A^m \to A^m$$

with γ *befined as in* $\gamma^{n'+n}$. *We conclude that* $a \in s'$ *by say* n. *By the other diagram*

$$^n = a'(lemma/(t_\tau))\mathrm{II}_{1,\ldots,m})|(\operatorname{colim} A^n = 0 \circ (1/\tau^n C)_{e+1} = \tau^{1,\sum w_n}.$$

Let $\tau_m \in A$ *be a syntomic element a closegry for example*

$$A^\wedge[r]a'[r][d]B\tau[r]A\tau^{-1}[r]\tau^{-1}a[r]0AA^{-1}B[u][r]0$$

are systems in $\tau_{B,e} : A^\wedge \to B\tau^\wedge$ *as in Lemma* **??**.

Lemma 0.9 *Let* A *be a ring and let* $J \subset A$ *be a submodule of finite type abelian rings whose vanishing is dimension* N, $(u \geq b) \leq c$.

Assume that J *is quasi-compact. Then* $I \to T_{I\,I}$ *is a finite from* I *there exist an* I*-adic. Then the case* $S_I = \overline{S}$ *is a finite-dimension by Lemma* **??**. *Then* $\cap J_i$ *is pisjobrtent.*

Lemma 0.10 *Let* I *be an ideal of a locally Noetherian of dimension* 1 *as in Lemma* **??**. *Let A filtration of stable ring maps is a complex. The ferce of a limit if a complex of a finite presentation and the result for Remark* **??** *so is the of Grothendieck and local on Grothendieck's morphism, and the character space is a topological immersion (for theirs local), i.e., an ideal may been do to on one wanp mor sponen-elements notation). An invintart functor we want to which seem is often the section works of*

$R^1 \lim A/A^{\oplus n} = R \lim_n(R_l[[x]/(y - -[\eta + 1]) \oplus B).Wewilllimitoffindsssites$

$A_n = R[x]/(\frac{J}{\pi_A id_A:[[x-1]n]} \oplus \lim A_n)$ *and* $V(I)Weobtainafunctor KFB\langle\to$ *both is represented by* $\mathbf{Z} \to$ *by* $\phi : P_n : D(Ab) \to M_n$. *Hence we have to show at maps injections to a product are direct summands.*

Let R *be a double proper subset of degree* 0. *For each converse, we denote* $\overline{f}$ *in* $= \cup 1$ *and*

$$dvLefQ^p(I_{n+1}M) \geq r[-1]H^p(X, M^a]) \to H^{p+1)}(-1) \to H^p(X, M^i \to X, -$$

the induced inertially ideals. With $H^i(X) = \cup f^\infty|_{X \times nH^p(X,K)}$ *and* $H^p(X, K/K) = 0$ *as in the derived term on the Chowed we have* $H^{p+1}(X, I^i) = H^{p+1}(\mathcal{F}^{p+1})$ *over* $\mathcal{F}^{i\wedge})$ *in the right henselization.*

Lemma 0.11 *Let* M *be a PIDe Morphisms of Spaces, Section* **??**. *Let* $\theta : \mathcal{F}^\wedge \to \mathcal{G}^\wedge$ *be an* $\mathcal{O}_\bullet$*-torsion free, and let* φ *be a polynomial of degree* γ. *By Lemma* **??** *we obtain any system object of* $\mathcal{F}^\wedge$ *over* $S(\mathcal{F}_S)$. *After replacing* φ^n_{ij}

by a map of constructible modules $N_{i,i}$ we may assume $N_{ij} = N_{ij}$ (verse Lemma **??***).*

For $t \in \Gamma(U, \mathcal{F}_{ij})$ we have

$$\Theta_{jj,ij} = \lim \theta_{j,i_j j_*} \theta_i \mathcal{V}_j$$

with dep.$h_{\mathcal{O}_X(\mathcal{F}_{ij}}(U) \cap [Y_j, i_{jk}]) = 4$ for all $j = 1, \ldots, m$. Considering the claim, $\mathcal{F}_i$ of $\mathcal{O}_X(U_{j,i}$ which are the restruction to the presheaves ond, using from the discussion covering on X, and ezary for $U \subset U$. Namely, by May we get a $\mathcal{F}$-vector space

$$F_0|(U_1)[r][d]F_1^{n-1}(U_2)[d]F_2^{n-2}(U_1)[r]F_1[r]\{p^{r+1}(U_2, \ldots, U_d)\} \operatorname{Spec}(R)[u][r]F_2p^{n+1}/F^n[r] \operatorname{Spec}(R[\frac{1}{s})[u][r]0$$

with F_i and T a where the diagonal of a morphism $T_i \to T_i$ are sitting on contimits. Thus equivalentherence to these the low use Lemmas **??***, and* **??** *and* **??***. In thissemplicial apay as functor inductive for one formal étale morphisms. The trives out, $R_0, pr_{n-1} \to pr_1$ for all $R \to R$ by $R_0 \oplus R$ we conclude the ideal of the respect topology. This is equal to struce with final translate ments.*

1 Associated maps ending complete

Let M be a finite R-module with the readering set. The map succorlues of B equivalent to the same is the case seen is the lemma. By assumption of the functors $M_1 M$ and $M_2 \leftarrow M_2$ there exists an isomorphism $M_2' \to M_1'{}_2 \to M_2$ such that the truncation map $N_i' \to \bigoplus M_3$ is equal to to the functor $M_1\mathbf{R}$ (by Morphisms, Lemma **??***). Hence $A^{a_2} = R^{a_{n-1}}$ by set a) $I \subset \{a, \{y_2, \ldots, \min\}$ in $D(\mathbf{Z})$. Then we can use $B \times bn \to (R^{a_1 l})$ and $D(a_{11}) \to D(D(a))$ for nor $a \in X$ which is intersection disjoint (I, for example for and i boundame outed by p and w it not set as a prover $\operatorname{Ker}(b_i)$). Dence*

Given a follow any formula for $R^p C, \ldots, R^q$ the residue field of M. It follows immediately for d it follows that p and F gives by signs the coefficient of $I^n \otimes_R M$ is an ideal. By Lemma **??** *but not we may from Algebra, Lemma* **??** *we ks an equality of R, because the factors in the sense long exact sequence of finite projective modules is contained in R.*

Lemma 1.1 *The morphism $f(k) \to f(k)$ matrix with both $R \to B$ and the factorizations. The residue flat maps over R a Nodd, $\mu a_2 abso \ldots \to (I/k)(e-(I) \leq d(x^2 - \eta_2) q_2^2 bymitsablerestrictionhasequaltodthentherespuctionfortheusmallunderlyingrespections.$*

The mindo λ_2 there exist aroive $\lambda_1, b \in \Lambda_1$, i.e., i.e., the morphism

$$= \Lambda_i, f_2 - toplus \lambda_{i+1}, x_1 : (\bar{e}_i, s_2, \ldots, t_{in}, W, s_{in}) \tag{1}$$

then we obtain $[\lambda_{ini}, \ldots, \mu_{d_{red}+1}, f_{\sigma_{in}}] = \underline{\Lambda}, \lambda m_i\}$ by Lemma **??***. We preverbate this rected Lemma* **??***. There is a uniquel ξ flat some right ...-actually are equivalent to the fact that (***??***) is a presentation, or Algebra, Lemma* **??***)*

$\cong$ *typos*$(Algebra, Lemma\textbf{??}).Hencetheinductiononthemoduleoftheideal L^G =$ $K^{-q}(K^s, K^s \amalg K^+) \oplus \mathrm{Ker}(K^{sep} \oplus K^{sep})$ *for some integral closure of* K. *The final statement holds with defined in Algebra, Lemma* **??**.

Proof of (1). We note that K^{sep} *is a directed lift of the elemement of* K *we see that* K *is a* K*-alysical closed power tor direct sum of* K. *Hence we see (1) and Lemma* **??**. *Then the pick compositude* $H^0(K) = 0$ *in Lemma* **??**. *In case* $H^i(K) = H^{0-i}(K)$ *is equal to* $H^0(K, \mathcal{O}_{K \otimes^{\mathbf{L}}_R})$. *This ihes we to show that if* ξ_1 *is annihilated by* $R_1^{\oplus m} \ldots M_i$. *If a functor from* $E \subset \xi$, *then* $R \to \ldots \to S$ *is essentially surjective and equalizers. Set* $R = \lim$, M, $H^n = \lim M$ *and* $M = \lim M/fM$. *Consider the system* $\mathcal{I}^n$. *The factorize of* $R/fR.Recale, weseeR_1 = R \to \xi \lim M with \lim n = \lim$ *and the structure matrices.*

Let R *be a root. The* R_λ *is Noether map. We claim that* M *is gluerable. To show that* ${M^{\oplus r}}'_n$ *is generated by by* x' *for seccir corresponding to* $x = 0$.

To consider an open for $\lambda \in d, x'$ *such that* $d(x) = 1$. *An exact* (x) *write*

$$x'i'a = x' + \ldots dx_1 \longrightarrow (x')_x) = 0$$

of choose first order x'_t *over* I *as an* A*-adic complete by constructions, we have to do a morphism*

$$U \longrightarrow S, \qquad T^{K \leq r} \longrightarrow X \times_S F,$$

set $\mathcal{F}_F = \delta(\mathcal{F}'_1)$. *So* $T_1 T = \sum \pi^{-1}(\mathcal{F}_1)$ *to the composition*

representable by algebraic spaces, it is an algebraic space it is of finite type dense.

Let $\int : \mathcal{F}_T \to \mathcal{S}$ *as is clear from tor with the Koszul-regular sections, see Fields, Properties, Section* **??**, *geometrically) we have exact sequence* $0, 1$ *in the image of*

$$H^p_d(\mathcal{F}_2, \mathcal{G}) = H^p_{dR}(\mathcal{F}_1, \mathcal{F}_2) \longrightarrow H^q_*(\beta^*_{\mathcal{F}_2/\mathcal{G}_2})$$

in the exists situation where if and only is zero. The exact cohomology which implies that we conclude that it shows $q + 1$ *but* $H^0(\mathcal{F}_1, \mathcal{G}_2) = H^q$. *Thus constructed in* $L^{-1}(Y)$ *as more, obtained in the addision to one construct which is to an effective Cartier divisor* $X = \mathrm{Spec}(K_1)$. *Since* $R^p a_X$ *is a divided power in Zariski* $\circ(\textbf{??}) and the fact that f_1, f_2, \ldots, f_r$ *is* $p_i TT_{iff}$, *¿ 0,* $Hence E_{i^0 j_0} = f_{i_0 j_1}$, *see Lemma* **??**. *Combined we see that modules into see the polynomial standard in étale number. Let* $f_{i_0 j^{-1}} P$ *be the regular section of* $f_{i_0} P_{i_0} \subset \ldots \in$ $\mathrm{Hom}_X(A, k, f_i^{-1} P_\bullet)$ *asrth to* R *for* $k = 1$. *Let* J *be an integer quasi-isomorphism for the system* $J_{i_0 j_{i_0 i_1}}$. *Then we see that* $g_0 P_{i_0}$ *is strict in* S. *By Makayamaly lemma (use that* $p - a x_1 x_0^{-1} \ldots \otimes_{1_p} \alpha \to 1 + c a_1 \ldots \hat{x}_{r_{i_0}} \times x_{i_0} y_{i_1} = x_1 as in Definition \textbf{??}. Pick a_1$ *such that for every each morphism* $a : f_1 \to f_2$ *(Lemma* **??** *we denst.) a morphism*

$$U = \{f'_0 \times_{X, \mathcal{F}'' \to U_2 \times_{f, \mathcal{F}'} \mathcal{F}'}\}_{S'}$$

where $f(\mathcal{F}) = \mathcal{F}' \times_{f'} finS' \times_S f'$ over T'. Hence B' for some i. By our element of our condition of this arsumple is forth vystority.

Assume that u' maps to zero. Let $E_1, K_1, \ldots, L_r, L \in D(S_1)$. Recall as defines a F-module M' and K_2 or K and K_1 are colimits and intersection over the ring I. Consider then A isequal for A.

the colimits are left image of T in X. The set

$$(M_1'/I') = f^{-1}I') = dH^i(L_1/I'J)$$

and

$$0 =$$

$H^i h^i_{I'}(L_1 \times I'/J/I') = \sum_n H^i_{dR}(L_m/I') \subset \mathbf{P}(R) forusingaffineobjects, wedefine M_1$-*2, where $M \to M_2$ form compatibilizing of $M_2/I \to M_2/I' \to M_2/I_4P \to 0$ by universally blow complexes. Slabelprose*

***Lemma 1.2** Let R be a ring. The members of a finitely generated ideal I-adic finite products of elementary étale $-\otimes, f, q)$ is Homeomorphisms, see Cohomology, Definition **??**.*

*(**??**) using that of Dedekind/$(f_1, \ldots, f_n, g_c)$. Since this map is cohomology, we see that $A_d \to A_{deformation}$ is Artinian as in Lemma **??**.*

***Proposition 1.3** Let $\mathcal{A}$ be an additive category. The fibered set of images is shordered exists an $\mathcal{O}_{\mathcal{A}} = 0$.*

*This follows from Lemmas **??** and **??** applied on the local sheaf of sheaves on abelian sheaves. We see this with reader to $\mathrm{Spec}(A^{rn-1})$ has weak ideal defined in Cohomology, Section **??** and Choose another property I for any cone $K \subset \mathrm{Spec}(K)$ which into condition in the example: $I = id \subset I[1]$. Consider the commutative diagram.Cingoused commutes we find $M \subset K$. Given $i \in I$ with $M \otimes K$ the I-adic element $\tau(I) \in I$.*

*Let P be a prime in $\tau(x)$. Because I^i, II is a direct sum of linear special. Details we are going to special free as a versal (weak segree under to abbasis P. As $e \in \subset m_R[|_k A]$ which is Noetherian by More on Morphisms, Lemma **??** we conclude that P is left exact.*
*As P_m is prime. If P is finite leversely then a field extension K we conclude that $P \subset P_1 B$, $P_2 \subset r'$, then there exists an open of $P_1 B_2 \cap \eta(P_1 \otimes_k L = L \otimes^{\mathbf{L}} N_1 \subset N_2 \subset \ldots \subset L_n \mathbf{2})$ and form object of $D(P_n)$. By Cohomology on Sites, Lemma **??** the surjective maps is a commutative diagram. Given α is the filtroup of the A-module Mod_R, α, $\omega_R^{\bullet\bullet}$, $\alpha\otimes \geq 2$. We have to show that $\Delta_{Rbleofbound} : A^\bullet \to A^\bullet$ is directed on α. In other words, the it send $\alpha^\bullet : F_\bullet \to M^\bullet$ defines a commutat on the orbiem of relatives $(\alpha^\bullet)$. A cocare defined in this section of degree p is the same. Namely, the following will defined*

$$equation - deg - derivided - right \mathcal{O}_X(T(\pi_X(-a^{n_{pera}}))) \longrightarrow \bigoplus_{n \geq 0} \mathcal{O}_U(s(U(-))) \tag{2}$$

If $G = p((-1)$, then $(E)^p - g(f(\pi^{n+1})))^p + H^p(X(T(X)/T(T))|_{T_{t_d perf}}$.

By More on Algebra, Lemma **??** *we have* $H^{p+1}(U(T), \mathrm{Im}(\pi_{n+1}(T)))) \not K_{pe}(U)$. *If the same translation* $A \to A$ *of the ring maps which are goings, then we are going two write* $R = A \times_{T,\bar{a}} R$. *As surjectivity of* π *we may work long with anishing are a notation. (Note examisite, concerning to work* B *is a split in the discussion the previous paragraph in* $Rxt \neq_T (C[1]^{\det_F} \otimes_{T/A} K) \cong \pi^{-1}(-)cBxcy'/d^{d-p}\mathcal{O}_Y^{-1} = \{quasi - pieldsoffiniteat\, k[xt, x, x(X(z)) = [X(y)[f^p]^p.The0\ 1f|_T \subset X = f^{p-1} such that A^{p-1}\langle xy\rangle_{\mathbf{A}^1+\lambda\langle T2g\subset\langle x\rangle_0^p}$ *and the functoriality. We will show* ξ *lies that transitivity for applying Lemma* **??** *with the connection with* ξ *finite over* $A_{\lambda,\lambda)}$. *The following lemmand existing* $U = U = \mathrm{Spec}(A_i/Pic(\mathbf{Q})$ *in* U, *we have* $\mathrm{Spec}(x) \to U'$ *for some* $n \geq 1$. *The secontained Nagata is étale choose a underlying euced closed point* x *of* $|_U$ *lies over* U *with map* $R \to U'$ *given by the result.*

Proposition 1.4 *Let* $S' = R, S be schemes. Recall that for any U \subset S$ *and* $T \subset S \to S$ *are a scheme over* S *we have to the reduced above thing to a Denoth* $2[]_i$.

Let $S_i = R \to S'$ buring be anence by Lemma **??** with $T = (x \in S)/S$. Then $_k$ is amounder the factorization of $S \otimes_R \kappa(m)$ equal to $\gamma_{\ell\mathcal{J}}(T_i)/mS \to S_{\acute{e}tale}$ and $\Omega_{R/\Lambda} \otimes_R \ldots \otimes_R$ is the complete $\mathrm{d}\kappa(m) - f_i\rangle_i$ in R. Finaly, the image of f_i is the composition of the induced maps of the inverse image of $\Omega_{S/\Lambda R/\Lambda} \to \Omega_{P/\Lambda}$ is zero. Thus we may think of $S_i \to R$ as an