References to Part I


References to Part I


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[N''] A. Neeman, Derived Categories and Grothendieck Duality, preprint.


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way-out, 38, 39
Glossary to Part II

[?, −] the internal hom, 277

\(\heartsuit\) stands for either PA, AB, PM, or Mod, 294

\((?\rangle_J\) the pull-back associated with the inclusion \(J \hookrightarrow I\), 322

\((?\rangle_J\heartsuit\) the abbreviation for \(Q(X_\bullet, J)^\#\), 323

\((?\rangle_J^\heartsuit\) the restriction \(\heartsuit(X_\bullet|_J) \rightarrow \heartsuit(X_\bullet|_{J_1})\), 323

\((?\rangle_J^{\text{PA}}\) the abbreviation for \(Q(X_\bullet, J)^{\#}_{\text{PA}}\), 322

\((?\rangle_J^{\text{AB}}\) the abbreviation for \(Q(X_\bullet, J)^{\#}_{\text{AB}}\), 322

\(\otimes\) the product structure, 277

\(\otimes_{\mathcal{O}_X}\) the sheaf tensor product, 290

\(\otimes^p_{\mathcal{O}_X}\) the presheaf tensor product, 290

\((?\rangle^1\) the equivariant twisted inverse, 417

\((?\rangle_{x}^\heartsuit\) the restriction functor, 295

\(\mathcal{A}\) the category of noetherian \(I^{\text{op}}\)-diagrams of schemes and morphisms separated of finite type, 415

\(\mathcal{A}\text{b}\) the category of abelian groups, 287

\(\mathcal{A}\text{b}(X)\) the category of sheaves of abelian groups on \(X\), 287

\(\mathcal{A}_G\) the category of noetherian \(G\)-schemes and \(G\)-morphisms separated of finite type, 445

\(\alpha\) the associativity isomorphism, 277

\((\alpha)\) the canonical map \((d_0)^* \rightarrow (?\langle_{\Delta}) \circ (?\rangle', 364

\((\alpha^+)\) the canonical map \((d_0^+)^* \rightarrow (?\rangle' \circ (?\langle_{\Delta}), 364

\(\alpha_{\heartsuit}\) the translation map, 322

\(\mathcal{A}(R_\bullet)\) the total ring of \(R_\bullet\), 465

\(\alpha(X, \text{AB})\) the sheafification functor \(\text{PA}(X) \rightarrow \text{AB}(X)\), 287

\(\alpha(X, \text{Mod})\) the sheafification \(\text{PM}(X) \rightarrow \text{Mod}(X)\), 289

\(B^M_G(X)\) the restriction \(B_G(X)|_{\Delta_M}\), 446
\(B_G(X)\) the simplicial groupoid associated with the action of \(G\) on \(X\), 445

\(C\) the morphism adjoint to \(\eta\), 281

\(\tilde{c}\) the canonical isomorphism \(f^!_R R_J \to R R_J(f_\bullet | J)^!\), 428

\(c'\) the canonical isomorphism \(R R_J(f_\bullet |_J)^! \to f^!_\bullet R R_J\), 428

\(C(\mathcal{A})\) the category of complexes in \(\mathcal{A}\), 311

\(C^b(\mathcal{A})\) the category of bounded complexes in \(\mathcal{A}\), 311

\(C^- (\mathcal{A})\) the category of complexes in \(\mathcal{A}\) bounded above, 311

\(C^+ (\mathcal{A})\) the category of complexes in \(\mathcal{A}\) bounded below, 311

\(\check{\text{C}}\) the \(\check{\text{C}}\)ech complex, 387

\(c = c(f)\) the identification \(q f^\# = f^# q\) or its inverse, 294

\(c_{f,g}\) the canonical isomorphism \((gf)^# \cong g# f^#\) of an almost-pseudofunctor, 271

\(\chi(f\bullet)\) the canonical map \(f\bullet \otimes \mathcal{L}_O X \to f\bullet \otimes \mathcal{L}_O Y\), 432

\(\bar{\chi} = \bar{\chi}(p_\bullet, i_\bullet)\) see page, 433

\(\bar{c}_{J,f\bullet}\) the canonical isomorphism \(\bar{c}^{\langle \cdot \rangle}_{J,f}\) of an almost-pseudofunctor, 271

\(\text{Coh}(G, X)\) the category of coherent \((G, \mathcal{O}_X)\)-modules, 446

\(\text{Cone}(\varphi)\) the mapping cone of \(\varphi\), 313

\(\text{cosk}_J\) the right adjoint of \(\langle ?| J \rangle\), 322

\(\text{Cos}(\mathcal{M})\) the cosimplicial sheaf associated with \(\mathcal{M}\), 365

\(\text{Cos}^+(\mathcal{N})\) the augmented cosimplicial sheaf associated with \(\mathcal{N}\), 365

\(\mathbb{D}\) the descent functor, 368

\((d_0)(X_\bullet)\) the natural map \(X_\bullet (\delta_0) : X_\bullet | (\Delta) = X_\bullet \text{shift } \iota \to X_\bullet\), 363

\((d_0^+)\) the natural map \((Y_\bullet | (\Delta))' = Y_\bullet \iota\text{ shift } Y_\bullet (\delta_0^+) \to Y_\bullet\), 363

\(\text{D}^2(\mathcal{A})\) the derived category of \(\mathcal{A}\) with the boundedness ?\), 311

\(\text{D}^b_{\mathcal{A}}(\mathcal{A})\) the localization of \(K^b_{\mathcal{A}}(\mathcal{A})\) by the épaisse subcategory of exact complexes, 311

\(D_{\text{Coh}}^b(\text{Qch}(X_\bullet))\) a short for \(D_{\text{Coh}}^b(\text{Qch}(X_\bullet))\), 351

\(\Delta\) see page, 281

\(\langle \Delta \rangle\) see page, 359

\(\langle \Delta \rangle^\text{mon}_S\) see page, 359

\(\langle \Delta^+ \rangle\) see page, 359

\(\langle \Delta^+ \rangle^\text{mon}_S\) see page, 359

\((\delta_0)\) the natural map \(\text{Id}_{\langle \Delta \rangle} \to \text{shift } \iota\), 363

\((\delta_0^+)\) the standard natural transformation \(\text{Id}_{\langle \Delta^+ \rangle} \to \iota \circ \text{shift}\), 363

\(\Delta_M\) \(\langle \Delta^\text{mon}_{[0,1,2]} \rangle\), 359
\[ \Delta_M^+ \] (\( \Delta^+ \))_{\{0,1,2\}}; \ 359
\[ D^+_\text{EM}(X_\bullet) \] a short for \( D^+_\text{EM} (X_\bullet) (\text{Mod}(X_\bullet)) \), 351
\[ d_{f,g} \] the natural isomorphism \( f\#g\# \to (gf)\# \) of a contravariant almost-pseudofunctor, 272
\[ d = d(gf = f'g') \] the isomorphism \( (g')^* (f')^* \xrightarrow{d^{-1}} (f'g')^* = (gf)^* \xrightarrow{\text{d}^{-1}} f^* g^* \), 272
\[ D(G, X) \] stands for \( D(B^M_G(X)) \), 446
\[ d^\omega_{I,J,K} \] the canonical isomorphism \( L^\omega_{I,J} \circ L^\omega_{J,K} \cong L^\omega_{I,K} \); 328
\[ d^\omega_{f,*} \] the canonical isomorphism \( L^\omega_J (f_\ast)_{\omega} \cong (f_\ast)_{\omega} \circ L^\omega_J \); 328
\[ D^+_{\text{Qch}}(G, X) \] stands for \( D^+_{\text{Qch}(G,X)} (\text{Mod}(G, X)) \), 446
\[ D^+_{\text{Qch}}(X) \] a short for \( D^+_{\text{Qch}(X)} (\text{Mod}(X)) \), 351
\[ D(X_\bullet) \] a short for \( D(\text{Mod}(X_\bullet)) \), 351
\[ D(X_\bullet) \] stands for \( D_{\text{Lqc}}(X_\bullet) \), 415
\[ D^-(X_\bullet) \] locally bounded above derived category of \( X_\bullet \); 408
\[ D^+(X_\bullet) \] locally bounded below derived category of \( X_\bullet \); 408
\[ D^\omega(X_\bullet) \] the category of structure data, 331
\[ \text{EM}(G, X) \] the category of equivariant \((G, \mathcal{O}_X)\)-modules, 446
\[ \text{EM}(X_\bullet) \] the category of equivariant sheaves of \( \mathcal{O}_{X_\bullet} \)-modules, 324
\[ \varepsilon \] the counit map of adjunction, 273
\[ \eta = \eta(f) \] the map \( \mathcal{O}_Y \to f_* \mathcal{O}_X \), 278
\[ \text{ev} \] the evaluation map, 278
\[ \epsilon_X \] the isomorphism \( \text{Id}_{X_\#} \to (\text{id}_X)_\# \), 271
\[ \mathcal{F} \] the subcategory of \( \mathcal{A} \) consisting of objects with flat arrows and cartesian morphisms, 417
\[ f^\sharp_* \] the twisted inverse for a cartesian finite morphism \( f_\bullet \), 437
\[ (f_\bullet)^* \] the inverse image functor, 327
\[ (f_\bullet)^\omega \] the direct image functor, 327
\[ f_* \] the right adjoint of \( R(f_\bullet)_* \), 402
\[ f^\# \] the pull-back associated with \( f \), 289
\[ f^\times \] the right adjoint of \( Rf_* : D_{\text{Qch}}(X) \to D(Y) \), 391
\[ f^\#_{\text{AB}} \] the pull-back \( \text{AB}(X) \to \text{AB}(Y) \), 289
\[ f^{\#}_{\text{AB}} \] the left adjoint of \( f^\#_{\text{AB}} \), 290
\[ f^\circ_{\#} \] the left adjoint of \( f^\circ_{\#} \), 290
\[ (f_\bullet)^{\text{Lqc}} \] the direct image functor for \( \text{Lqc} \), 349
\[ \mathcal{F}_M \] see page, 445
\[ f^\#_{\text{Mod}} \] the pull-back \( \text{Mod}(X) \to \text{Mod}(Y) \) for a ringed continuous functor \( f : (Y, \mathcal{O}_Y) \to (X, \mathcal{O}_X) \), 294
\[ f^\#_{\text{Mod}} \] the left adjoint of \( f^\#_{\text{Mod}} \), 294
\[ f^\#_{\text{PA}} \] the pull-back \( \text{PA}(X) \to \text{PA}(Y) \) for \( f : Y \to X \), 289
\( f_{\#} \) the left adjoint of \( f_{\#} \), 289  
\( f_{\#} \) the right adjoint of \( f_{\#} \), 294  
\( f_{\#} \) the pull-back \( \text{PM}(X) \to \text{PM}(Y) \) for a ringed functor \( f: (Y, \mathcal{O}_Y) \to (X, \mathcal{O}_X) \), 294  
\( f_{\#} \) the left adjoint of \( f_{\#} \), 294  
\( F(X) \) the forgetful functor \( \text{Mod}(X) \to \text{AB}(X) \), 289  
\( f_{\#} \) the isomorphism \( \text{id}_X^\# \to \text{Id}_X^\# \), 272  
\( \gamma \) the twisting (symmetry) isomorphism, 277  
\( \Gamma \) the twisting (symmetry) isomorphism, 277  
\( \text{hocolim} \) the homotopy colimit, 381  
\( \text{holim} t_i \) the homotopy limit of \( (t_i) \), 381  
\( \text{Hom}_{\mathcal{O}_X}(\mathcal{M}, \mathcal{N}) \) the sheaf Hom functor, 295  
\( \iota \) the inclusion \( (\Delta) \hookrightarrow (\Delta^+) \), 363  
\( I_\mathcal{I}^f \) see page, 290  
\( K^?_\mathcal{A}(\mathcal{A}) \) the homotopy category of \( \mathcal{A} \) with the boundedness \( ? \), 311  
\( K^?_\mathcal{A}'(\mathcal{A}) \) the full subcategory of \( K^?_\mathcal{A}(\mathcal{A}) \) consisting of complexes whose cohomology groups lie in \( \mathcal{A}' \), 311  
\( \lambda \) the left unit isomorphism, 277  
\( \lambda_{J,J_1} \) the canonical isomorphism \( (L^\vartriangleleft J(\mathcal{M}))_{J_1}^i \cong \lim_{\to}(X_{\phi})^\vartriangleleft_{J}(\mathcal{M}_j) \), 334  
\( \text{Lch} \) the category of locally coherent sheaves, 384  
\( L^\vartriangleleft J \) the left induction functor, 327  
\( L^\vartriangleleft_{J,J_1} \) the left adjoint of \( (?)^{\vartriangleleft}_{J,J_1} \), 327  
\( \text{lqc} \) the local quasi-coherator for a diagram of schemes, 385  
\( \text{Lqc}(G, X) \) the category of locally quasi-coherent \( (G, \mathcal{O}_X) \)-modules, 446  
\( \text{Lqc}(X_\bullet) \) the full subcategory of locally quasi-coherent sheaves in \( \text{Mod}(X_\bullet) \), 346  
\( L^\vartriangleleft_{\mathcal{I}} \) the left adjoint of \( (?)^{\vartriangleleft} \), 295  
\( \text{Ly}(X) \) the Lyubeznik diagram of \( X \), 463  
\( \mathcal{M}' \) the pull-back \( F_{\mathcal{I}}^\#(\mathcal{M}) \), 364  
\( m = m(f) \) the natural map \( f_* a \otimes f_* b \to f_*(a \otimes b) \), 278  
\( m_i \) the isomorphism \( \mathcal{M}_i \otimes \mathcal{O}_{X_i}, \mathcal{N}_i \cong (\mathcal{M} \otimes \mathcal{O}_{X_\bullet}, \mathcal{N})_i \), 331  
\( \text{Mod}(G, X) \) the category of \( (G, \mathcal{O}_X) \)-modules, 446  
\( \text{Mod}(X) \) the category of sheaves of \( \mathcal{O}_X \)-modules, 289  
\( \text{Mod}(X_\bullet) \) the abbreviation for \( \text{Mod}(\text{Zar}(X_\bullet)) \), 323  
\( \text{Mod}(Z) \) the category of \( \mathcal{O}_Z \)-modules of a scheme \( Z \), 267  
\( \mu^\vartriangleleft \) the canonical map \( f^* R J \to R J(f^*_J)^* \), 341  
\( \mu(g^*_J, J) \) the canonical map \( g^* R R J \to R R J(g^*_J)^* \), 428  
\( \text{Nerve}(f) \) the \( \check{C}ech \) nerve of \( f \), 360
ν  the canonical isomorphism $\tilde{H}^0(\mathcal{U}, f^!\mathcal{M}) \cong \tilde{H}^0(f\mathcal{U}, \mathcal{M})$, 295

ν  the canonical isomorphism $\tilde{H}^0 f^!\mathcal{M} \to f^! \tilde{H}^0 \mathcal{M}$, 296

ωY  the G-canonical sheaf of Y, 455

$O_x$  $I_x^{\text{Mod}}(O_x|_x) \cong aO_x^p$, 316

P  the canonical map $f^*[a, b] \to [f^*a, f^*b]$, 283

Ψ  the category of strongly $K$-flat complexes, 316

$\Psi$  the full subcategory consisting of the direct limits of $\Psi$-special direct systems, 316

$\Psi$  the full subcategory consisting of the inverse limits of $\Psi$-special inverse systems, 316

PA($X$)  the category of presheaves of abelian groups on $X$, 287

$\phi^\triangledown$  stands for the pull-back $(\mathcal{A}_\phi)^\# : \triangledown(X/y) \to \triangledown(X/x)$, 295

$\phi^\triangledown_x$  stands for $(\mathcal{A}_\phi)^\circ : \triangledown(X/x) \to \triangledown(X/y)$, 295

$\Phi^{\text{RA}}$  the Radu-André homomorphism, 464

$\mathcal{P}(I, \mathcal{C})$  the category of presheaves over the category $I$ with values in $\mathcal{C}$, 287

$\Pi(f)$  the canonical map (projection morphism) $f_*a \otimes b \to f_*(a \otimes f^*b)$, 431

PM($X$)  the category of presheaves of $O_X$-modules, 289

PM($X_\bullet$)  the abbreviation for PM(Zar($X_\bullet$)), 323

$\mathcal{P}(X_\bullet, \mathcal{C})$  the abbreviation for $\mathcal{P}(\text{Zar}(X_\bullet), \mathcal{C})$, 322

Q  the localization $K^\prime(A) \to D^\prime(A)$, 311

$\Omega$  the full subcategory of $C(\text{Mod}(X))$ consisting of bounded above complexes whose terms are direct sums of copies of $O_x$, 316

Qch($G, X$)  the category of quasi-coherent ($G, O_X$)-modules, 446

qch($X$)  the quasi-coherator on a scheme $X$, 385

Qch($X_\bullet$)  the full subcategory of Mod($X_\bullet$) consisting of quasi-coherent modules, 346

Qch($Z$)  the category of quasi-coherent $O_Z$-modules of a scheme $Z$, 267

$q(X, AB)$  the inclusion $AB(X) \to PA(X)$, 287

$Q(X_\bullet, J)$  the inclusion Zar($(X_\bullet)|_J) \hookrightarrow \text{Zar}(X_\bullet)$, 322

$q(X, \text{Mod})$  the inclusion Mod($X) \to PM(X)$, 289

$R^*$  the set of nonzerodivisors of $R$, 459

$\rho$  the right unit isomorphism, 282

$\rho^{j, i}$  the canonical isomorphism $(R^\circ_j(M))_i^{\triangledown} \cong \varprojlim(X^\phi_j)^\circ(M_j)$, 337

$R^\circ_j$  the right induction functor, 327

$R^\circ_{j, j_1}$  the right adjoint of $(?)^{\triangledown}_{j_1, j}$, 327
\( R_{\phi} \) the canonical functor \( \mathbb{X}/x \to \mathbb{X}/y \) for \( \phi : x \to y \), 295

\( R_x \) the canonical functor \( \mathbb{X}/x \to \mathbb{X} \), 295

\( \text{Sch} \) the category of schemes, 321

\( \text{Sch}/S \) the category of \( S \)-schemes, 321

\( \text{Set} \) the category of small sets, 287

\( \text{shift} \) the standard shifting functor \( (\Delta^+) \to (\Delta) \), 363

\( \Sigma \) the suspension of a triangulated category, 311

\( \Sigma_i \) the right adjoint of \( \Gamma_i \), 408

\( \Sigma(\mathbb{X}^\cdot) \) the simplicial \( S \)-scheme associated with \( \mathbb{X}^\cdot \), 376

\( \mathbb{S}(\mathbb{X}, \mathcal{C}) \) the category of sheaves over \( \mathbb{X} \) with values in \( \mathcal{C} \), 287

\( \mathbb{S}(\mathbb{X}^\cdot, \mathcal{C}) \) the abbreviation for \( \mathbb{S}(\text{Zar}(\mathbb{X}^\cdot), \mathcal{C}) \), 322

\( \tau_{\geq n} F \) the truncation of a complex, 317

\( \tau_{\leq n} F \) the truncation of a complex, 317

\( \bar{\theta} \) the canonical map \( \mathbb{R}(g^X_\cdot)_* (p'_{\mathbb{X}})^! \to f^X_\cdot |^! (\mathbb{X}) \), 419

\( \bar{\xi} \) the canonical map \( \mathbb{R}(g_\cdot^X)_* (p'_\cdot)^! \to f_\cdot^X |^! (\mathbb{X}) \), 420

\( \zeta(\sigma) \) the canonical map \( \mathbb{R}(g'_{\mathbb{X}})^* f^X_\cdot \to (f'_{\mathbb{X}})^* g^X_\cdot \), 413

\( \zeta(\sigma) \) the canonical map \( \mathbb{R}(g^X_\cdot)^* f_\cdot^X \to (f'_{\mathbb{X}})^! g^X_\cdot \), 420

\( \text{Y}(\mathcal{M}) \) the canonical map \( \mathcal{M} \to \mathcal{H}^0(\mathcal{M}) \), 288

\( \text{Zar}(\mathbb{X}^\cdot) \) the Zariski site of \( \mathbb{X}^\cdot \), 321

\( \zeta(\sigma) \) the canonical map \( \mathbb{R}(g^X_\cdot)^* f^X_\cdot \to (f'_{\mathbb{X}})^* g^X_\cdot \), 413

\( \zeta(\sigma) \) the canonical map \( \mathbb{R}(g^X_\cdot)^* f_\cdot^X \to (f'_{\mathbb{X}})^! g^X_\cdot \), 420
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