GROTHENDIECK'S BIBLIOGRAPHY BY TOPIC

by Giacomo Aiello

COMMUNICATIONS TO PARIS ACADEMY OF SCIENCES [1]

1. ***Sur la Complétion du Dual d'un Espace Vectoriel Localement Convexe***
   C. R. Acad. Sc. Paris **230** (1950), 605 – 606

2. ***Quelques Résultats Relatifs a la Dualité dans les Espaces ($\mathcal{F}$)***
   C. R. Acad. Sci. Paris **230** (1950), 1561 – 1563

3. ***Critères Généraux de Compacité dans les Espaces Vectoriels Localement Convexes. Pathologie des espaces ($\mathcal{LF}$)***
   C. R. Acad. Sci. Paris **231** (1950), 940 – 941

4. ***Quelques Résultats sur les Espaces Vectoriels Topologiques***
   C. R. Acad. Sci. Paris **233** (1951), 839 – 841

5. ***Sur une Notion de Produit Tensoriel Topologique D'espaces Vectoriels Topologiques, et une Classe Remarquable d'Espaces Vectoriels Liée à Cette Notion***
   C. R. Acad. Sci. Paris **233** (1951), 1556 – 1558

6. ***Résultats Nouveaux dans la Théorie des Operations Linéaires I***
   C. R. Acad. Sci. Paris **239** (1954), 577 – 579

7. ***Résultats Nouveaux dans la Théorie des Operations Linéaires II***
   C. R. Acad. Sc. Paris **239** (1954), 607 – 609

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[1] Since the communications to Paris Academy are not papers in proper sense, we have put them in a special section.

FUNCTIONAL ANALYSIS

8. ***Critères de Compacité dans les Espaces Fonctionnels Généraux***
   Amer. J. Math. **74** (1952), 168 – 186 (December 1950)

9. ***Sur Certains Espaces de Fonctions Holomorphes I***
   J. Reine Angew. Math. **192** (1952), 35 – 64 (November 1951)

10. ***Sur Certains Espaces de Fonctions Holomorphes II***
    J. Reine Angew. Math. **192** (1952), 77 – 95

11. ***Sur les Applications Linéaires Faiblement Compactes d'Espaces du Type C(K)***
    Canadian J. Math. **5** (1953), 129 – 173 (March 1952)

12. ***Sur les Espaces de Solutions d'une Classe Générale d'Equations aux Dérivées Partielles***
    J. Analyse Math. **2** (1953), 243 – 280 (April 1952)

13. ***Résume des Résultats Essentiels dans la théorie des Produits Tensoriels Topologiques et des Espaces Nucléaires***
    Ann. Inst. Fourier **4** (1952), 73 – 112

14. ***Produits Tensoriels Topologiques et Espaces Nucléaires***
    Bourbaki Seminar **69** (December 1952)

15. ***Sur les Espaces ($\mathcal{F}$) et ($\mathbf{D}\mathcal{F}$)***
    Summa Brazil. Math. **3** (1954), 57 – 123 (December 1952)

16. ***Sur Certains Sous-Espaces Vectoriels de L^{p}***
    Canadian J. Math. **6 (1954)**, 158 – 160 (October 1953)

17. ***La Théorie de Fredholm*** [2]
    Bull. Soc. Math. France **84** (1956), 319 – 384

18. ***La Théorie de Fredholm***
    Bourbaki Seminar **91** (March 1954)

19. ***Operations Algébriques sur le Distributions à Valeur Vectorielle. Théorème de Künneth*** [3]
    Schwartz Seminar 1953/54 (June 1954)

20. ***Résume de la Théorie Métrique des Produits Tensoriels Topologiques*** [4]
    Bol. Soc. Mat. Sao Paulo **8 (1956)**, 1 – 79 (June 1954)

21. ***Quelques Points de la Théorie des Produits Tensoriels Topologiques***
    Segundo Symposium Sobre Algunos Problemas Matematicos … Montevideo (Uruguay), 173 – 177 (July 1954)

22. ***Une Caractérisation Vectorielle-Métrique des Espaces L^1***
    Canadian J. Math. **7 (1955)**, 552 – 561 (September 1954)

23. ***Sur Certaines Classes de Suites dans les Espaces de Banach, et le Théorème de Dvoretzky – Rogers***
    Bol. Soc. Mat. Sao Paulo **8** (1956), 81 – 110 (December 1954)

24. ***Réarrangements de Fonctions et Inégalités de Convexité dans les Algèbres de von Neumann Munies d'une Trace***
    Bourbaki Seminar **113** (March 1955)

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[2] This work was submitted to *Summa Braziliensis Mathematicae* in 1953, but for the long delay in publication, Grothendieck retired the manuscript, which appeared in print only three years after.

[3] Though the author is not indicated, in the introduction of the Schwartz Seminar (completely consecrated to Grothendieck's theory of topological tensor products) the redactor indicates Grothendieck as author.

[4] For many experts, this paper is the greatest Grothendieck's contribution to functional analysis. (Cf. Joe Diestel et al. *The Metric Theory of Tensor Products – Grothendieck's Résumé Revisited*, AMS (2008)).

25. ***Produits Tensoriels Topologiques et Espaces Nucléaires*** [5]
   Mem. AMS **16** (1955) (Erratum, Ann. Inst. Fourier **6**, 117 – 120)

26. ***Un Résultat sur le Dual d'une C* - Algèbre***
   J. Math. Pures Appl. **36** (1957), 97 – 108

27. ***The Trace of Certain Operators***
   Studia Math. **20** (1961), 141 – 143

28. ***Topological Vector Spaces*** **(Redacted by Orlando Chaljub)** [6]
   Gordon & Breach Science Publishers (1973)

HOMOLOGICAL ALGEBRA & SHEAF THEORY

29. ***Théorèmes de Finitude pour la Cohomologie des Faisceaux*** [7]
   Bull. Soc. Math. France 84, 1 – 7 (1956)

30. ***A General Theory of Fibre Spaces with Structure Sheaf***
   Preprint of University of Kansas, 1955

31. ***Sur Quelques Points d'Algèbre Homologique*** [8]
   Tôhoku Math. Journ. **9**, 119 – 221 (1957)

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[5] This is the monumental Grothendieck's Ph. D. Thesis. It was defended in Nancy in February 1953. Before the publication, Grothendieck published a readable summary ([13]).

[6] Grothendieck held this course in 1954 during his permanence in Sao Paulo (1952 – 1954). It was published by the *Sociedade Matematica de Sao Paulo*. It was translated in English and published as book only 19 years later.

[7] This paper has the same story of [17]. Grothendieck submitted it to *Anaïs da Academia Brasileira de Ciencias* in 1953, but for the delay in publication, he retired the manuscript. This paper is the first reflection of Grothendieck about a subject different by functional analysis.

[8] This revolutionary paper was written in 1955 during Grothendieck's visit in Kansas. Grothendieck needed two years to redact it, and published it in a (not very famous) Japanese journal, with a very modest title. It became widely known as "The Tôhoku Paper".

32. ***Sur les Faisceaux Algébriques et Analytique Cohérents***
Henri Cartan Seminar **9** (1957), Exp. 2 (February 1957)

33. ***Algèbre Homologique***
Grothendieck Seminar (1957)

34. ***Introduction aux Langage Fonctoriel*** [9]
Course Held in Alger (November 1965)

35. ***Catégories Cofibrées Additives et Complexe Cotangent Relatif***
Springer Lecture Notes in Mathematics **79** (1968)

ELEMENTS DE GEOMETRIE ALGEBRIQUE (EGA) [10]

36. **EGA I – *Le Langage des Schémas*** [11]
Publ. Math. de l'IHES **4** (1960)

37. **EGA II – *Etude Globale Elémentaire de Quelques Classes de Morphismes***
Publ. Math. de l'IHES **8** (1961)

38. **EGA III – *Etude Cohomologique des Faisceaux Cohérents I***
Publ. Math. de l'IHES **11** (1961)

39. **EGA III – *Etude Cohomologique des Faisceaux Cohérents II***
Publ. Math. de l'IHES **17** (1963)

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[9] After the Algerian War (1954 – 1962), many French mathematicians like Grothendieck, Serre and Godement went often to Alger to held there some courses. In this way, they contributed to develop the mathematics department of Alger and to reestablish friendship links between France and Algeria.

[10] Redacted with the collaboration of Jean Dieudonné.

[11] The second edition of this first volume was published in 1971 by Springer-Verlag in the series *Grundlehren der Mathematischen Wissenschaften*, volume 166.

40. **EGA IV –** *Etude Locale des Schémas et des Morphismes de Schémas I*
    Publ. Math. de l'IHES **20** (1964)

41. **EGA IV –** *Etude Locale des Schémas et des Morphismes de Schémas II*
    Publ. Math. de l'IHES **24** (1965)

42. **EGA IV –** *Etude Locale des Schémas et des Morphismes de Schémas III*
    Publ. Math. de l'IHES **28** (1966)

43. **EGA IV –** *Etude Locale des Schémas et des Morphismes de Schémas IV*
    Publ. Math. de l'IHES **32** (1967)

44. **EGA V –** *Hyperplane Sections and Conic Projections* [12]
    Unpublished (1965)

SEMINAIRES DE GEOMETRIE ALGEBRIQUE (SGA) [13]

45. **SGA 1 (1960/61) –** *Revêtements Etales et Groupe Fondamental*
    Springer Lecture Notes in Mathematics **224** (1971)

46. **SGA 2 (1962) –** *Cohomologie Locale et Théorèmes de Lefschetz Locaux et Globaux*
    North-Holland Publishing Company (1968)

47. **SGA 3 (1962/64) –** *Schémas en Groupes*
    Tome I – Springer Lecture Notes in Mathematics **151** (1970)
    Tome II – Springer Lecture Notes in Mathematics **152** (1970)
    Tome III – Springer Lecture Notes in Mathematics **153** (1970)

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[12] These notes were redacted by Grothendieck and had to perfected by Dieudonné. But it never happened. They were successively redacted by Piotr Blass.

[13] These are the celebrated seminars held by Grothendieck in the 60s at the IHES. They were redacted with the collaboration of students and colleagues.

48. **SGA 4 (1963/64)** – *Théorie des Topos et Cohomologie Etale des Schémas* [14]
    Tome I – Springer Lecture Notes in Mathematics **269** (1972)
    Tome II – Springer Lecture Notes in Mathematics **270** (1972)
    Tome III – Springer Lecture Notes in Mathematics **305** (1973)

49. **SGA 5 (1965/66)** – *Cohomologie ℓ - adique et Fonctions L*
    Springer Lecture Notes in Mathematics **589** (1977)

50. **SGA 6 (1966/67)** – *Théorie des Intersections et Théorème de Riemann-Roch*
    Springer Lecture Notes in Mathematics **225** (1971)

51. **SGA 7 (1967/69)** – *Groupes de Monodromie en Géométrie Algébrique I* [15]
    Springer Lecture Notes in Mathematics **288** (1972)

ALGEBRAIC GEOMETRY & GROUP THEORY

52. *Généralités sur les Groupes Algébriques Affines. Groupes Algébriques Affines Commutatifs*
    Chevalley Seminar « Classification des groupes de Lie Algébriques » , Exp. 4 (November 1956)

53. *Compléments de Géométrie Algébrique. Espaces de Transformations*
    Chevalley Seminar « Classification des Groupes de Lie Algébriques », Exp. 5 (November 1956)

54. *Les théorèmes de Structure Fondamentaux pour les Groupes Algébriques Affines*
    Chevalley Seminar « Classification des Groupes de Lie Algébriques », Exp. 6 (December 1956)

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[14] Some parts of SGA 4 – such as some remarkable theorems about topos, the cohomological descente and the fundamental expositions XVII and XVIII – are due to Pierre Deligne.

[15] The second tome of SGA 7 (Springer Lecture Notes in Mathematics **340** (1972)), contains only two "Exposes" of Grothendieck (both redacted by Nick Katz, [93] and [94]). The other results of SGA 7 II are due to Pierre Deligne and Nick Katz.

55. ***Sur le Mémoire de A. Weil : "Généralisation des Fonctions Abéliennes"***
Bourbaki Seminar **141** (December 1956)

56. ***Sous-groupes de Cartan, Eléments Réguliers. Groupes Algébriques Affines de Dimension 1***
Chevalley Seminar « Classification des Groupes de Lie Algébriques », Exp. 7 (January 1957)

57. ***Théorèmes de Dualité pour les Faisceaux Algébriques Cohérents*** [16]
Bourbaki Seminar **149** (May 1957)

58. ***Sur une Note de Mattuck – Tate***
J. Reine Angew. Math. **200** (1958), 208 – 215

59. ***Le Théorème de Riemann-Roch (d'après Grothendieck)*** **(Redacted by A. BOREL AND J.-P. SERRE)**
Bull. SMF **88** (1958), 97 – 136

60. ***La Théorie des Classes de Chern***
Bull SMF **88** (1958), 137 – 154

61. ***Sur Quelques Propriétés Fondamentales en Théorie des Intersections***
Chevalley Seminar «Anneaux de Chow et applications », Exp. 4 (June 1958)

62. ***Torsion Homologique et Sections Rationnelles***
Chevalley Seminar «Anneaux de Chow et applications », Exp. 5 (June 1958)

63. ***The Cohomology Theory of Abstract Algebraic Varieties***
Proc. ICM Edinburgh, 103 – 118 (August 1958)

64. ***Géométrie Formelle et Géométrie Algébrique***
Bourbaki Seminar **182** (May 1959)

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[16] [57], [64], [65], [66], [67], [68], [71] and [72] have been collected together, with the add of some comments, and published as book with the title of *Fondements de la Géométrie Algébrique*.

65. *Technique de Descente et Théorèmes d' Existence en Géométrie Algébrique I*
    Généralités. Descente par Morphismes Fidèlement Plats
    Bourbaki Seminar **190** (December 1959)

66. *Technique de Descente et Théorèmes d' Existence en Géométrie Algébrique II*
    Le Théorème d' Existence en Géométrie Formelle des Modules
    Bourbaki Seminar **195** (February 1960)

67. *Techniques de Construction et Théorèmes d' Existence en Géométrie Algébrique III*
    Preschémas Quotients
    Bourbaki Seminar **212** (February 1961)

68. *Techniques de Construction et Théorèmes d' Existence en Géométrie Algébrique IV*
    Les Schémas de Hilbert
    Bourbaki Seminar **221** (May 1961)

69. *Abelian Schemes* **(Redacted by DAVID MUMFORD)** [17]
    Chapter 6 of "Geometric Invariant Theory", Springer – Verlag (1965) (Fall 1961)

70. *Local Cohomology* **(Redacted by ROBIN HARTSHORNE)**
    Springer Lecture Notes in Mathematics **41** (1967) (Fall 1971)

71. *Technique de Descente et Théorèmes d' Existence en Géométrie Algébrique V*
    Les Schémas de Picard
    Bourbaki Seminar **232** (February 1962)

72. *Technique de descente et théorèmes d'existence en géométrie algébrique VI*
    Les schémas de Picard : Propriétés générales
    Bourbaki Seminar **236** (May 1962)

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[17] Grothendieck exposed his theory of abelian schemes during his permanence at Harvard University in fall 1961. There, he also exposed the local properties of schemes (successively appeared in EGA IV), Hilbert Schemes, Picard Schemes (never published in systematic form but just sketched in his Bourbaki seminars), and local cohomology theory (redacted successively by Robin Hartshorne, [70]).

73. ***Residues and Duality* (Redacted by ROBIN HARTSHORNE)** [18]
   Springer Lecture Notes in Mathematics **20** (1966) (August 1963)

74. ***On Contravariant Functors from the Category of Preschemes over a Field into the Category of Abelian Groups* (With JAAP MURRE)**
   Publ. Math. IHES **23** (1964), 5 – 43

75. ***Méthode de la Descente* (Redacted and developed by JEAN GIRAUD)** [19]
   Mem. de la SMF **2** (1964), 1 – 150

76. ***Formule de Lefschetz et Rationalité des Fonctions L***
   Séminaire Bourbaki **279** (December 1964)

77. ***Caractéristique d'Euler-Poincaré d'un Faisceau et Cohomologie des Variétés Abéliennes* (Redacted by MICHEL RAYNAUD)** [20]
   Bourbaki Seminar **286** (February 1965)

78. ***Le groupe de Brauer I - Algèbres d'Azumaya et Interprétations Diverses***
   Bourbaki Seminar **290** (May 1965)

79. ***Representation of Unramified Functors* (Redacted by JAAP MURRE)**
   Bourbaki Seminar **294** (May 1965)

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[18] This is the famous seminar held by Robin Hartshorne at Harvard in the academic year 1963/64. It is the developments of the duality theorems sketched by Grothendieck seven years before [57]. From 1957 to 1963 Grothendieck was so busy with EGA and SGA that he had not materially time to redact his ideas. A part of this redactional work was made by Jean Louis Verdier in his thesis, where he introduced the so-called "derived categories", the correct frame where Grothendieck's duality could be developed in a rigorous way. In Spring 1963, Robin Hartshorne (at that time in Harvard), offered to Grothendieck to run a seminar about [57] if he had redacted the material. Grothendieck accepted and in a few months wrote a massive manuscript (never published) of 250 pages called "Résidus et Dualité: Prénotes pour un Séminaire Hartshorne". But his notes were too much general and Hartshorne had to simplify them using the best restrictive hypotheses. The result of his efforts is [73]. However, the work of Hartshorne contains some highly not trivial errors, corrected only many decades after by Brian Conrad, in *Grothendieck Duality and Base-Change*, Springer Lecture Notes in Mathematics **1750** (2000) (and some addendum).

[19] This paper is the Exp.7 of SGA 1, not present in the published version of the seminar. Grothendieck and Giraud preferred to publish it separately because this paper analyzes some questions, in their own words, "too much distant by algebraic geometry".

[20] In this article, redacted by Michel Raynaud, Grothendieck established the "Euler-Poincaré formula" for torsion sheaves on an algebraic curve, today known as *Grothendieck-Ogg-Shafarevich formula*. It was obtained by Grothendieck thanks to an epistolary exchange with Jean Pierre Serre which suggested him to use the Swan conductors. We should speak, more correctly, of *Grothendieck-Ogg-Serre-Shafarevich formula*.

80. ***On the De Rham Cohomology of Algebraic Varieties***
    Publ. Math. IHES **29** (1966), 95 – 103

81. ***Le groupe de Brauer II - Théorie Cohomologique***
    Bourbaki Seminar **297** (November 1965)

82. ***Critères Différentiels de Régularité pour les Localises des Algèbres Analytiques* (With
    J**EAN **D**IEUDONNE**)**
    Journal of Algebra **5,** 305 – 324 (1967)

83. ***Le groupe de Brauer III - Exemples et Compléments***
    In « Dix Exposes sur la Cohomologie des Schémas », North-Holland (1968), 88 – 188
    (March 1966)

84. ***La Classe de Cohomologie Associée à un Cycle* (Redacted by P**IERRE **D**ELIGNE**)** [21]
    In « Cohomologie Etale » , 129 – 153 (Spring 1966)

85. ***Théorèmes de Finitude en Cohomologie ℓ-adique* (Redacted and improved by P**IERRE
    DELIGNE**)** [22]
    In « Cohomologie Etale » , 233 – 251 (Spring 1966)

86. ***Un Théorème sur les Homomorphismes des Schémas Abéliens***
    Inv. Math. **2** (1966), 59 – 78

87. ***Classes de Chern et Représentations Linéaires des Groupes Discrètes***
    In « Dix Exposes sur la Cohomologie des Schémas », North-Holland (1968), 215 – 305
    (December 1966)

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[21] This article and the successive appear in the little book *Cohomologie Étale* (Springer Lecture Notes in Mathematics **569** (1977)), universally known as **SGA 4 1/2**, written by Pierre Deligne as a "readable" introduction to the difficult SGA 4 and to the (at that time yet unpublished) SGA 5.

[22] It is an improvement of Grothendieck's second Exposé of SGA 5, which was not redacted in SGA5. The original title of Grothendieck's talk was: "Formules de Künneth pour la Cohomologie à Supports Quelconques ". Grothendieck in 1963 had obtained the so-called "traces formula" (essential step to prove the rationality of Z-functions) using the works of the mathematicians Nielsen and Wecken. However, not satisfied, in [76] he obtained a more general traces formula using the (at that time) conjectural "Lefschetz-Verdier equation", and without verifying its properties (finiteness, Künneth formulas, local duality). Pierre Deligne in [85] proved these properties, realizing the aspirations of Grothendieck.

88. ***Crystals and the De Rham Cohomology of Schemes* (Redacted by J. COATES AND O. JUSSILA)** [23]

In « Dix exposes sur la Cohomologie des Schémas », Masson (1968), 306 – 358 (December 1966)

89. *Motifs* [24]

Seminar held at the IHES, Spring 1967.

90. ***Standard Conjectures on Algebraic Cycles*** [25]

In « Algebraic Geometry » (1969), 193 – 199

Proceedings of the Bombay Colloquium (January 1968)

91. ***Every Eigenvalue of a Monodromy Matrix is a Root of Unity* (Redacted by J-P. SERRE & J. TATE)** [26]

In the appendix of *Good Reduction of Abelian Varieties*, Ann. of Math. **88** (1968), 492 – 517

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[23] In this paper Grothendieck formulates the crystalline cohomology of schemes. His ideas were further developed in the massive thesis of Berthelot.

[24] This is the famous seminar held by Grothendieck about motives. The notes have been finally TeXed and now are available in the Grothendieck-Circle. Grothendieck never published about motives. His ideas were redacted by his student Saavedra Rivano in his thesis, and by his colleagues in these four papers:

- YURI MANIN, *Correspondances, Motifs et Transformations Monoidales*,
  Mat. Sbornik **77** (1968), 475 – 507

- STEVEN KLEIMAN, *Algebraic Cycles and the Weil Conjectures*
  Dix exposes sur la Cohomologie des Schémas, Masson (1968), 359 – 386

- MICHEL DEMAZURE, *Motifs de Variétés Algébriques*
  Sem. Bourbaki **365** (November 1969), 19 – 38

- STEVEN KLEIMAN, *Motives*
- Proceedings of the 5th Nordic Summer School in Algebraic Geometry", Wolters-Noordhoff (1970), 53 – 88

[25] In this short expository paper Grothendieck exposed the celebrated "standard conjectures" about algebraic cycles, formulated by him in summer 1965 (cf. Correspondence Grothendieck-Serre). After almost 50 years, the progresses about these conjectures have been almost null.

[26] This amazing result is dated 1964. Grothendieck never published it. In 1968, Jean Pierre Serre and John Tate published it in the appendix of their paper *Good Reduction of Abelian Varieties*.

92. *Hodge's General Conjecture is False for Trivial Reasons*
Topology **8** (1969), 299 – 303

93. *Etude Cohomologique des Pinceaux de Lefschetz* (**Redacted by NICK KATZ**)
SGA 7, Tome II, Exp. XVIII

94. *Le Théorème de Griffiths* (**Redacted by NICK KATZ**)
SGA 7, Tome II, Exp. XX

95. *Morphisme de Gysin en Cohomologie de Hodge* (**Redacted by PIERRE DELIGNE**)
Paragraphe 4 of *Théorèmes de Lefschetz et Critères de Dégénérescence des Suites Spectrales*
Publ. Math. IHES **35** (1968), 107 – 126

96. *Travaux de Heisouké Hironaka sur la Résolution des Singularités*
Actes du Congres International des Mathématiciens (Nice, September 1970), Tome **1**, 7 – 9

97. *Représentations Linéaires et Compactification Profinie des Groupes Discrètes*
Manuscripta Math. **2** (1970), 375 – 396

98. *Groupes de Barsotti-Tate et Cristaux de Dieudonné*
Les Presses de l'Université de Montreal (1974) (July 1970)

99. *Groupes de Barsotti-Tate et Cristaux*
Actes du Congres International des Mathématiciens (Nice, September 1970), Tome 1, 431 – 436

100. *Platitude d'une Adhérence Schématique et Lemme de Hironaka Généralise* (**with SEYDI HAMET**)
Manuscripta Math. **5** (1971), 323-339

101. *The Tame Fundamental Group of a Formal Neighborhood of a Divisor with Normal Crossings on a Scheme* (**with JACOB MURRE**)
Springer Lecture Notes in Mathematics **208** (1971)

ANALYTIC GEOMETRY

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[27] This is the redaction of a course held by Grothendieck at the College de France in 1970 – 72.

[28] The first part of this article is about the functor "determinant"; it was the subject of the redacted exposition XI of Daniel Ferrand in SGA 6. Grothendieck speaks about the "determinant" in the note 585 of Recoltés & Semailles. The second part of the article is the redaction of a letter written by Grothendieck to David Mumford in 1962.

[29] In the Cartan Seminar 1960/61, Grothendieck transposed the "functorial approach" of his algebraic geometry into analytic geometry. His new and anti-intuitive ideas inspired the experts of complex geometry such as H. Grauert, J.P. Ramis, G.Ruget, E. Kiehl, O. Foster, K. Knorr.

DIFFERENTIAL GEOMETRY[30]

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[30] The papers 117 and 118 were written by Grothendieck for the Bourbaki series in June 1957, as indicated by Armand Borel in the article *Twenty-Five Years with Nicolas Bourbaki* (Notices of AMS **45** (1998), 373 – 380). Nothing of these pages was inserted in the volume of Bourbaki *Variétés Différentielles et Analytiques*.

AFTER THE DEPARTURE

119. *Complexe de De Rham à Puissances Divisées* **(Redacted by HENRI CARTAN)** [31]
     Inv. Math. **35**, 269 – 271

120. *La Longue Marche à Travers la Théorie de Galois*
     Unpublished (1981)

121. *Pursuing Stacks*
     Unpublished (1983)

122. *Les Dérivateurs*
     Unpublished (1990)

PH. D. THESES

1. MICHEL DEMAZURE
    Schémas en Groupes Réductifs [32]
    Bull. SMF. **93** (1965), 369 – 413

2. JEAN GIRAUD
    Cohomologie non Abélienne
    Grundlehren Math. Wissenshaften **179** Springer–Verlag (1972)

3. JEAN-LOUIS VERDIER
    Des Catégories Dérivées des Catégories Abéliennes
    SMF Astérisque **239** (1996)

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[31] This paper is contained in the last two pages of an article of Henri Cartan entitled "Théories Cohomologiques". It is the last official Grothendieck's talk, held at IHES on December 12, 1975. It is quoted by the same Grothendieck in the *Esquisse d'un Programme* .

[32] Demazure's thesis is developed in SGA 3, tome III.

4. MONIQUE HAKIM
    Topos Annelés et Schémas Relatifs
    Ergebnisse Math. Gr. **64**, Springer–Verlag (1972)

5. JEAN -PIERRE JOUANOLOU
    Catégories Dérivées en Cohomologie ℓ-adique [33]
    Never published (1969)

6. LUC ILLUSIE
    Complexe Cotangent et Déformations
    Springer Lecture Notes in Mathematica **239** & **283** (1971)

7. WILLIAM MESSING
    Crystals Associated to Barsotti-Tate Groups (with applications to Abelian Schemes)
    Springer Lecture Notes in Mathematics **264** (1972)

8. NEANTRO SAAVEDRA RIVANO
    Catégories Tannakiennes
    Springer Lecture Notes in Mathematics **265** (1972)

9. PIERRE BERTHELOT
    Cohomologie Cristalline des Schémas de Caractéristique p > 0
    Springer Lecture Notes in Mathematics **407** (1974)

10. MICHELE RAYNAUD
    Théorèmes de Lefschetz en Cohomologie Cohérente et en Cohomologie Etale
    Mem. of SMF. **41** (1976)

11. YVES LADEGAILLERIE
    Isotopic Study of Embeddings of a Topological 1-complex into a Complex Surface
    Topology **23** (1984), 303 – 311

12. CARLOS CONTOU-CARRERE
    Jacobiennes Généralisées Globales Relatives
    Grothendieck Festschrift **II**, 69 – 109 (1990)

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[33] In *Récoltes & Semailles*, Grothendieck speaks many times of this thesis, defining it a god and useful work.

LETTERS

- ***Correspondence with Serre (1955 – 1985)***
  AMS (2003) (Bilingual Version)

- ***Correspondence with David Mumford (1962 – 1986)***
  In D. MUMFORD, *Selected papers. Volume II,* Springer-Verlag (2010).

- ***Letter to John Tate*** [34]
  (March1966)

- ***Letter to Luc Illusie*** [35]
  (July 1973)

- ***Letter to Gerd Faltings*** [36]
  (June 1983)

OVERVIEWS ON HIS OWN WORK

- ***Esquisse Thématique*** [37]
  (1972)

- ***Esquisse d'un Programme***
  (January 1984)

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[34] In this long letter, Grothendieck introduces the notion of "crystal", first step toward the formulation of crystalline cohomology.

[35] This letter was written in May 1973 from Buffalo, where Grothendieck was holding a course about the foundations of algebraic geometry [104]. It can be considered his last scientific work before the departure from Paris.

[36] In this letter Grothendieck exposed, for the first time, his ideas about the so-called "anabelian geometry".

[37] It is an interesting and very readable account of his own work in the "official" period (1948 – 1971).

POLITICS – SOCIETY – RELIGION

- ***La Vie Mathématique en République Démocratique du Vietnam***
  Conference held at the "Faculté des Sciences de Paris" (Paris VI) (December 20, 1967)

- ***Responsabilité du Savant dans le Monde d'Aujourd'hui: le Savant et l'Appareil Militaire*** [38]
  Conference held at the "Université d'Orsay" (June 26, 1970)

- ***Comment Je Suis Devenu Militant ?***
  Conference held at the "Faculté des Sciences de Paris" (Paris VI) (December 15, 1970)

- ***Allons Nous de Continuer la Recherche Scientifique ?***
  Conference at the CERN (Geneve) (January 27, 1972)

- ***Récoltes et Semailles***
  Unpublished (1986)

- ***La Clef des Songes***
  Unpublished (1987)

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[38] English Translation: "The Responsibility of the Scientist Today", Queen's Papers in Pure and Applied Mathematics **27** (1971) (University of Kingston, Ontario (CA)).