CURRICULUM VITAE ALBERTO ALZATI

1. General

Alberto Alzati, graduated in Mathematics on 24-11-80 with full marks and honors from the University of Milan, discussing a thesis on: "Quadruple plans and triple-resolving plans" (supervisor prof. Carlo Felice Manara); during the last months of elaboration of the thesis he received a scholarship from the C.N.R. for undergraduates.

During the 1980/1981 academic year he attended 3 algebraic courses at the Postgraduate School of Mathematics at the University of Florence. From 28-4-81 to 28-7-82 he served as a military officer.

In May 1983 he took the exams of a free competition for researcher at the University of Milan, (discipline group 89: Algebra and Geometry); result winner took service as an unconfirmed researcher on 3-9-84 at the Faculty of Mathematics, Physics and Natural Sciences of the aforementioned University, belonging to the Department of Mathematics "F. Enriques". In September 1987 he obtained the confirmation in the role.

Included in the list of winners of the competition for positions of Associate Professor announced with Ministerial Decree of 28-7-90 and 9-10-90 he took up this qualification at the aforementioned Faculty on 1-11-92. Subsequently, in compliance with law 341 of 19-10-90, he requested and obtained to be framed, for the purposes of didactic functions, in the scientific-disciplinary sector A01C (now MAT / 03) for the Geometry discipline. In November 1995 he was put on trial for confirmation in the role, obtaining it starting from 1-11-95.

On 28 March 2017 he obtained the national scientific qualification for the first level for the competition sector 01 / A2 (Geometry and Algebra).

In 2018 it obtained a funding from the MIUR for the basic research activities (ANVUR notice 20/2017).

2. Participation in courses and conferences

From 1983 to the present Alberto Alzati has participated:

- at a summer course in Mathematics (Cortona 1986);
- two courses C.I.M.E. ("Theory of Modules" Montecatini 1985, "Algebraic Cycles and Hodge Theories "Turin 1993);
- at numerous mathematical conferences and congresses in Italy and abroad (see the list below).

On some of these occasions he gave scientific communications; on other occasions (Trieste 1989; L'Aquila 1992; UMI 1995; Ferrara 2002; Atlanta 2005; Bologna 2006; Turin 2010; Pau 2013; Nice 2017) communications or posters were held, by other authors, on collaborative work with them.

3. Talks at worshops

"A method for the computation of the cohomologies of the restricted tangent and the normal bundle on smooth rational curves " An Algebraic Geometry day in Como, Como, 7-7-17.

"Tracking 3D orientation through corresponding conics" Advanced Concepts for Intelligent Vision Systems, Bordeaux, 28 / 9-2 / 10-09

"Rational applications induced by linear hypersurface systems" Communication at the XVII UMI Congress, Milan Bicocca, 8 / 13-9-03

"Special linear systems of quadrics and applications" Projections of projective, secant, Jordan algebras, Florence 18 / 19-4-02

"Numerically connected divisors" Miniworkshop on algebraic varieties, Rome 18 / 19-1-02

"k-normality of non-linearly normal varieties and applications" Conference on Commutative Algebra and Algebraic Geometry, Catania 11 / 13-4-01

"Symmetrical correspondences generating abelian submanifolds of a Jacobian" Days of Algebraic Geometry I, L'Aquila 11 / 11-11-91

"The problem of rationality for cubic complexes containing planes" Communication at the GNSAGA conference, Trieste 6 / 8-10-88

"Subvarieties of small dimension in P^n" Communication at the XIII UMI Congress,
Turin 3 / 9-9-87

"3-variety in G (1,4)" Communication at the GNSAGA conference, Catania 16 / 18-10-86.

4. Seminars held by invitation

"Splitting of restricted tangent bundle and nornal bundle over rational curves"
Univ. Of Lille 24-4-15

"Generalized Cremonian transformations" Polit. Milan 3-5-12

"Special linear systems, syzygies, rational maps" Univ. Of Pavia 19-3-08

"Special linear systems, syzygies, rational maps" Univ. Of Florence 27-2-08

"Very ampleness numerical criteria for rank 2 vector bundles over ruled surfaces" University of Lille 16-5-07

"Very ampleness numerical criteria for rank 2 vector bundles over ruled surfaces "
Univ. of Genoa 8-5-07
"Existence vs non-existence of some special varieties" Univ. Of L'Aquila 5-4-05
"Existence vs non-existence of some special varieties" Univ. Of Pisa 16-3-05
"Cremonian and syzygic transformations" Univ. Of Milan Bicocca 11-26-03
"Monomial invariants in codimension 2" Univ. Of Turin 29-5-03
"Monomial invariants in codimension 2" Univ. Of Genoa 6-5-03
"k-normality of the projected varieties" Univ. of Ferrara 19-4-00
"k-normality of the projected varieties" Univ. of Florence 14-3-00
"k-regularity and m-regularity of some projective varieties" Univ. of Ferrara 16-6-98
"k-regularity of algebraic varieties and related questions" Univ. of L'Aquila 5-6-97
"A new Castelnuovo bound by submanifold of codimension 2 in P ^ n (C), n> = 5"
Univ. Of Rome II 18-2-92
"Hartshorne's conjecture on complete intersections and the projective normality of a subvariety of codimension 2 in P^n (C), n> = 6 " Univ. Of Turin 15-3-91.

5. Organization of conferences and schools
In 2018 he was among the organizers of the conference "Genoa-Turin-Milan Seminar: some topics in the Commutative Algebra and Algebraic Geometry ", Milan 17 / 18-7-18.
In 2015 he was among the organizers of the conference "Genoa-Turin-Milan Seminar: some topics in the Commutative Algebra and Algebraic Geometry ", Milan 24 / 25-9-15.
In 2014 he was among the organizers of the conference "Genoa-Turin-Milan Seminar: some topics in the Commutative Algebra and Algebraic Geometry ", Milan 28 / 29-1-14.
In 2011 he was among the organizers of the conference "Genoa-Turin-Milan Seminar: some topics in the Commutative Algebra and Algebraic Geometry ", Milan 17 / 18-11-11.
In 2010 he was among the organizers of the conference "Days of Geometry Algebraic and related issues X ", Gargnano del Garda.
In 2009 he was among the organizers of the conference "Genoa-Turin-Milan Seminar: some topics in Commutative Algebra and Algebraic ", Milan 19 / 20-11-09.
In 2009 he was among the organizers of the conference "Projective Algebraic Geometry in Milan ", Milan 11 / 12-6-09.
In 2007 he was among the organizers of the Graduate School "Projective geometry and birational of the algebraic varieties "Gargnano del Garda, 10 / 14-4-07.
In 2005 he was among the organizers of the conference "Geometry of Algebraic Varieties "Ferrara 22 / 25-6-05.
In 2002 he was among the organizers of the conference "Birational and Projective Geometry of Algebraic Varieties "Ferrara 3 / 7-9-02.
In 2000 he was among the organizers of the conference "Days of Algebraic Geometry and related topics V "Gargnano del Garda 23 / 27-5-00.

6. Attended conferences
See the complete list on Italian CV

7. Miscellaneous
Since 1986 he is collaborator of G.N.S.A.G.A. of the C.N.R.
From the date of his service, he carried out various organizational tasks on behalf of the director of the department to which he refers (purchase and management of equipment, commission for the subdivision of 60% MURST funds, various educational commissions).
From October 1998 to October 2010 he was secretary of the CCL in Mathematics (later CCDM) and worked at the reorganization of the CDL in Mathematics.
Since October 2010, he has been chairing the CCD study plans for the reformed Master's degree.
From academic year 01/02 he was a member of the faculty of the doctorate in mathematics of the university and remained there until the completion of the XXII cycle (2010).

8. Research activities
The scientific activity of Alberto Alzati took place in the field of complex Algebraic Geometry.
Initially the interest was turned to the study of the problem of the existence of possible varieties immersions in Grassmannians, with particular regard to the case of the fibrate varieties in linear and nonlinear spaces, in G (1,4); (papers [1], [2], [3], [4]).
Later on, two other very different problems were faced:
- on the one hand the study of the rationality or not of some of the three-dimensional varieties classically known as cubic complexes; (papers [6], [7], [13], [21]).
- on the other hand, the analysis of sub-varieties of small codimension in P^n tending to demonstrate, in the final analysis, the famous Hartshorne conjecture on complete intersections; (papers [5], [9], [10], [11], [16], [18], [22], [27], [38], [41], [45], [49], [58]); of this question continues to work.
Attention was also paid to:
- the study of symmetric correspondences on a curve, (papers [12], [23]), and in particular to the De Franchis theorem on the maximum number of holomorphic applications existing between a fixed curve and an another; (papers [14], [15]);
- the study of the rational equivalence of zero-cycles on 3-symmetric products of Abelian varieties, (paper [17]);
- to the study of some questions concerning the holomorphic forms defined on a variety (paper [20]);
- to the extension of the classical theorems of Severi-De Franchis to the varieties of dimension greater or equal to three, already performed by others in the case of surfaces, (papers [24], [26]).
Part of the time was also dedicated:
- to the study of the classification of polarized surfaces, (paper [8]);

- to give a reformulation, in the language of complex Algebraic Geometry, of a series of results by J. Mather, concerning singularities of holomorphic applications, used in previous works, (paper [19], later extended to singular varieties, paper [33]);
- to the compilation of a survey concerning the Griffiths theorem on Hamiltonian systems in order to render this theorem, stated in the language of Algebraic Geometry, more easily understood by mathematical physicists, (paper [25]).

Alberto Alzati subsequently dealt with:
- the determination of some very ampleness criteria for divisors of elliptic curved projective bundles (paper [29]) and more recently of rank 2 bundles on ruled surfaces (paper [46]), which led also to the solution of an elementary projective geometry problem related to configurations of lines and points (paper [60]).
- the study of the k-regularity of smooth algebraic varieties both linearly normal (papers [28], [30], [31], [32]) and non-linear normal (paper [34]);
- of the concept of connected divisors on manifolds with a dimension greater than two (paper [36]).

Further questions addressed were:
- the analysis of some subomaloid systems in relation to the classification of varieties with only one apparent double point (papers [35], [37]);
- the study of particular extremal contractions and rational maps (papers [39], [42], [59], [61]), which also led to an estimate of the degree of the schemes defined by quadrics (paper [52]);
- the construction of algebraic surfaces using computer algebra techniques (paper [43]);
- the classification of reducible Veronese surfaces and isomorphic projectability issues for reducible varieties of minimum degree (papers [48], [54], [55], [56]).

Recently he has also dealt with geometrical representations of module spaces (papers [51], [53]), in particular of the space of rational curves with a given fragment of the tangent and normal bundle (papers [63], [66], [67], [69]) and on the characterization of rank 2 bundles on P^2 and on rational ruled surfaces of a special type (papers [65], [68]).

Recently he has also worked on the conjecture concerning Weak Lefschetz Property (paper [70]).

Since 2002 he has been collaborating with some computer science professors in the field of computer vision (papers [40], [44], [47], [50], [57], [62], [64]).

On the issues mentioned, Alberto Alzati held seminars almost every year in the Geometry Seminars of the University of Milan and in the conferences in various Italian universities.

9. Publications

See the complete list on AIR.

10. Teaching activity

As a researcher Alberto Alzati has carried out his teaching activity (exercises and exams) at the Degree Course in Mathematics, the Degree in Science of Information and the Degree Course in Physics of the Faculty of Mathematical Sciences, Physical and Natural of your own University.

For the C. of L. in Mathematics has played every year, from the academic year 84/85, the exercises of the course of Institutions of Higher Geometry and, for the years 88/89 and 89/90, also those of a course in Geometry II.
For the C. of L. in Computer Science he carried out the exercises until the year 87/88 of a semester course in Algebra or Geometry.
For the C. of L. in Physics he played in the academic year 91/92 part of the exams of one of the courses of Geometry.
In the academic year. 92/93, as associate professor, Alberto Alzati held a course in Geometry I for the C. of L. in Mathematics and has also carried out the exercises of the course of Higher Geometry Institutions for the same C. di L.
In the academic year. 93/94, Alberto Alzati held the same course and the course of Geometry II, as an additional teaching assignment, for the Como University, (at that time not yet Autonomous Faculty of the University of Milan and then of the University of Insubria).
In the a.y. from 94/95 to 98/99 Alberto Alzati held a course of Geometry II for the C. of L. in Mathematics.
In the academic year. 96/97 he also held, as a paid substitute, one of the Geometry courses for C. di L. in Physics.
In the academic year 99/00 he held the two modules of Geometry II provided by the new study plans. From a.y. 00/01 to the academic year 11/12 he held one of the two modules of the old course of Geometry II, module called Geometry III and then Geometry 3, based on reordering of C. of L., but with the same number of hours.
From a.y. 01/02 he also holds a 20-hour module of the Image Processing course (in the academic year 03/04 as a paid replacement).
From a.y. 10/11 the module went to 27 hours, based on the reorganization of C. di L.
From a.y. 01/02 to the academic year 03/04 Alberto Alzati worked on the organization and teaching of preparatory courses.
In the academic year 06/07 he held one of the zeroing courses for freshmen.

From a.y. 97/98 he is holding a module of Computational Geometry for C. of L. in Informatics (48 hours of lessons).

From a.y. 12/13 Alberto Alzati is holding one of the Fundamentals of Mathematics modules (36 hours between lectures and exercises) for the C. of L. in Biotechnologies.
From a.y. 14/15 the activity turned into half of the Mathematics course of the new Law of C. of L., with the same number of lessons and exercises.

In the a.y. 13/14 and 14/15 Alberto Alzati has also held a block of 16 hours, between lessons and exercises, of the course of General Mathematics for the C. of L. in Biological Sciences.
In the a.y. 15/16, 16/17, 17/18 18/19 an 8-hour block was held.

Alberto Alzati was the advisors of 23 theses and 14 final papers for three-year degree courses, concerning algebraic and differential geometry, knot theory, crystallographic groups, Thurston's results on automorisms of compact topological surfaces, catastrophe theory , Fuchsian groups, Bézier curves and related arguments, degenerative configurations in computer vision, fractals, elementary arguments in number theory, logic and probability calculus.

Alberto Alzati has also been co-author with Mariagrazia Bianchi of three exercises, addressed essentially to the students of the C. of L. in Computer Science and published by UTET - De Agostini. The first, now out of business: "Algebra: exercises taken from exam topics" was a Algebra workbook adopted in some Italian universities. The second one, too out of the trade: "Algebra: self-evaluation test" was a collection of original tests having the purpose of allowing the student to test his own Preparation. The third one: "Discrete mathematics: exercises" (also in collaboration with Massimo Cariboni) gathers together with completely new exercises a selection of those contained in the two previous volumes. A new edition of the latter workbook was published in 2006 by Pearson Education.
Alberto Alzati is also co-author with Cristina Turrini of a Topology workbook: "Exercises of Topology for Geometry courses "addressed to the students of C. of L. in Mathematics and published by UTET - De Agostini.

Alberto Alzati, by invitation, has held various conferences of an informative nature at some high schools in the province of Milan and a short cycle of lessons for the S.I.L.S.I.S., as well as some lessons on the theory of fractals for the L.U.de.S. University of Lugano.

10. Attività didattica

Come ricercatore il sottoscritto ha svolto la sua attività didattica (esercitazioni ed esami) presso il Corso di Laurea in Matematica, il Corso di Laurea in Scienze dell'Informazione e il Corso di Laurea in Fisica della Facoltà di Scienze Matematiche, Fisiche e Naturali della propria Università.

Per il C. di L. in Matematica ha svolto ogni anno, dall'a.a. 84/85, le esercitazioni del corso di Istituzioni di Geometria Superiore e, per gli anni 88/89 e 89/90, anche quelle di un corso di Geometria II.
Per il C. di L. in Scienze dell'Informazione ha svolto, fino all'anno 87/88, le esercitazioni di un corso semestrale di Algebra o Geometria.
Per il C. di L. in Fisica ha svolto nell'a.a. 91/92 parte degli esami di uno dei corsi di Geometria.

Nell'a.a. 92/93, come Professore associato, il sottoscritto ha tenuto un corso di Geometria I per il C. di L. in Matematica ed ha inoltre svolto le esercitazioni del corso di Istituzioni di Geometria Superiore per lo stesso C. di L.
Nell'a.a. 93/94, il sottoscritto ha tenuto lo stesso corso ed il corso di Geometria II, come incarico didattico aggiuntivo, per la sede di Como, (a quel tempo non ancora Facoltà autonoma dell'Università di Milano e poi dell'Università dell'Insubria).
Negli a.a. dal 94/95 al 98/99; il sottoscritto ha tenuto un corso di Geometria II per il C. di L. in Matematica. Nell'a.a. 96/97 ha inoltre tenuto, come supplenza retribuita, uno dei corsi di Geometria per il C. di L. in Fisica.
Nell'a.a. 99/00 ha tenuto i due moduli di Geometria II previsti dai nuovi piani di studio.

Dall'a.a. 00/01 all'a.a. 11/12 ha tenuto uno dei due moduli del vecchio corso di Geometria II, modulo che si chiamava Geometria III e poi Geometria 3, in base al riordino del C. di L., ma con lo stesso numero di ore.
Dall'a.a. 01/02 tiene anche un modulo di 20 ore del corso di Elaborazioni di Immagini (nell'a.a. 03/04 come supplenza retribuita). Dall'a.a. 10/11 il modulo è passato a 27 ore, in base al riordino del C. di L.
Dall'a.a. 01/02 all'a.a. 03/04 e si è occupato dell'organizzazione e della didattica dei precorsi. Nell'a.a. 06/07 ha tenuto uno dei corsi di azzeramento per le matricole.

Dall'a.a. 97/98 sta tenendo un modulo di Geometria Computazionale per il C. di L. in Informatica (48 ore di lezione).

Dall'a.a. 12/13 il sottoscritto sta tenendo uno dei moduli di Fondamenti di Matematica (36 ore tra lezioni ed esercitazioni) per il C. di L. in Biotecnologie. Dall'a.a. 14/15 l'attività si è trasformata nel tenere metà del corso di Matematica del nuovo Ordinamento del C. di L., con lo stesso numero di ore di lezione ed esercitazioni.

Negli a.a. 13/14 e 14/15 il sottoscritto ha tenuto anche un blocco di 16 ore, tra lezioni ed esercitazioni, del corso di Matematica Generale per il C. di L. in Scienze Biologiche. Negli a.a. 15/16, 16/17, 17/18 18/19 è stato tenuto un blocco di 8 ore.

Il sottoscritto è stato relatore di 23 tesi e di 14 elaborati finali per corsi di laurea triennali, concernenti la geometria algebrica e differenziale, la teoria dei nodi, i gruppi cristallografici, i risultati di Thurston sugli automorfismi delle superfici topologiche compatte, la teoria delle catastrofi, i gruppi Fuchsiani, le curve di Bézier e argomenti affini, le configurazioni degeneri in computer vision, i frattali, argomenti elementari di teoria dei numeri, logica e calcolo delle probabilità.

Il sottoscritto è stato inoltre coautore con Mariagrazia Bianchi di tre eserciziari, rivolti essenzialmente agli studenti del C. di L. in Informatica ed editi dalla UTET - De Agostini. Il primo, ora fuori commercio: "Algebra: esercizi tratti da temi d'esame" era un eserciziario di Algebra adottato in alcune Università italiane. Il secondo, anch'esso fuori commercio: "Algebra: test di auto-valutazione" era una raccolta di test originali aventi lo scopo di permettere allo studente di saggiare autonomamente la propria preparazione. Il terzo: "Matematica discreta: esercizi" (in collaborazione anche con Massimo Cariboni) raccoglie accanto ad esercizi completamente nuovi una selezione di quelli contenuti nei due volumi precedenti. Una nuova edizione di quest'ultimo

eserciziario è stata edita nel 2006 dalla Pearson Education.
E' inoltre coautore con Cristina Turrini di un eserciziario di Topologia: "Esercizi di Topologia per i corsi di Geometria" rivolto agli studenti del C. di L. in Matematica ed edito dalla UTET - De Agostini.

Il sottoscritto, su invito, ha tenuto varie conferenze di carattere divulgativo presso alcune scuole superiori della provincia di Milano ed un breve ciclo di lezioni per la S.I.L.S.I.S., nonché alcune lezioni sulla teoria dei frattali per l'Università L.U.de.S. di Lugano.