RACE FOR A HIGHER QUALITY OF THE SCIENTIFIC INFORMATION: A 60 YEARS (1957-2017) RETROSPECT OF THE MAIN PERSONAL CONCERNS AND STUDIES I. FIRST (1957-SUMMER 1992) ACTIVITY YEARS

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Abstract. *This work presents a brief review of the main results obtained by author during the years 1957-2017, in the field of Information Science.*
Given being that now the most studied systems are complex, the Information Science is strongly related to the Complexity Theory. Due to the: a) fact that the symmetry of the magnetic field relative to mirroring is different (opposite) to those of the gravitational and electrical fields, respectively, b) microstructure of the spontaneous magnetization domains, the physical systems influenced by the magnetic fields present a higher Complexity degree.
The beginning (start) of author's professional activities was marked by the: a) choice of a magnetic sample (material) and process (the hysteresis one) as topic of the first scientific research from his academic student years (1957), b) choice of the Syntax and Semantic aspects of the continuous X radiation, as topics of his Bachelor Dissertation, c) rejection of the separate study of Physics fields for the final (oral) Bachelor examinations (1960), and the later Physics study (1960-1963) as a whole.
The professional duties compelled later to study also other Physics parts, but the ensemble of the achieved professional activities and results had the aspect of some random (Brownian-like) motions around a straight-line centered on different topics of the Information Science and Complexity Theory. There are reported also the main results and applications of these studies concerning: a) the definition and pointing out of the main features of the Information concept, b) its scientific, technical and didactic applications, c) the nature sciences, certain medical fields and some technical devices of interest for the scientific research.

Key words: Information Science, Complexity Theory, Syntactic Structures

1. Introduction

The obtainment of high quality scientific information needs both the use of some mathemathical procedures for the data processing, as well as of certain physical methods to ensure the necessary experimental data. As it was shown by the Italian writer Leon Battista Alberti (1404-1472), that though the celebrated antique Greek scientist Archimede (285-212 b. Chr.) was very much fond for the Mathematical studies, he emitted his strong cry "*Evrika!*" (i.e. *I have found!*) only after the obtainment of an absolutely outstanding information due to his experimental finding of the strong upward forces acting on the bodies immersed in liquids [1].

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It is also well known that while the obtainment of information does not meet any difficulties for the simple (no similitude numbers) and even for the complicate (only one irreducible similitude number), it becomes really very difficult for the complex (several similitude criteria) physical systems. For this reason, there is a strong connection between the theories of Information and of the Complexity, respectively. For the same reason, an efficient method of information obtainment has to examine the whole studied system, not only its isolated parts.

Given being the limited space of this study, we have to underline also that the well-known American linguist and philosopher Noam Abraam Chomsky (born 1928) predicted in the 1950-1960's years the existence of a universal (generative) grammar, inscribed in the human brain, even from the child's birth [2]. This hypothesis was confirmed in 2015 by the team of the American neuropsychologist professor David Poeppel (born 1964, from the New York University) [3]. Eventually, the Swedish group of professor Arttu Jolma, from the Karolinska Institutet, pointed out [4] the presence of a complex grammar in the human genome, more complex than that of the most intricately constructured spoken languages in the world.

2. Preliminaries

The following elements represent only a personal report, their only one goal being to specify the stages of a long race towards information of high quality:

a) Even from my elementary forms, I noted regularly my remarks referring to the required exercises by the Mathematics professors, and tried to organize them as certain original problems. In this manner, at the end of my 10 forms high-school (at less than 16 years) I had a list of 25 original (own) Mathematics problems. One of these problems was published (as problem 1935) by our Romanian Review (Gazette) of Mathematics and Physics [5], while the others were published by the review *Evrika!* (also for pupils).

b) Beginning from the 8^{th} form (at about 14 years), I solved and sent the solutions of some problems published by the above indicated Gazette, being among the first (best) 10 Romanian pupils solvers in the years 1954 and 1955.

c) Beginning from the 9^{th} form (1954), I participated to the Romanian Mathematics Olympiads for the high-school pupils, obtaining the 1^{st} national prize [the 1–6 national classifying place (NCP)] in the 9^{th} form (1954) and the 3^{rd} national prize (6^{th} NCP) in the 10^{th} high-school form (1955).

3. 1957-1966: First scientific topics and advisers

After a first academic year (1955-1956) of accommodation at the Physics faculty of Bucharest, I followed my permanent personal trend and I participated to the first national professional contest (1956-1957) for the students of the Romanian

Physics faculties. After a first stage (fall 1956) intended to the solution of a very large number (around of 100) of Mathematics and Physics problems (solving around of 90% of these problems), I was qualified to the final (national) stage. In the frame of this stage, there were 2 written works (for Mathematics and Physics, respectively), as well as one oral examination on Physics topics. On this occasion, I had a huge surprise: both our examiners [professors Ion Agârbiceanu and Dumitru Bârcă-Gălăţeanu were physicists, but they worked at the … Polytechnic Institute (PIB) of Bucharest!]. Explanations? I have found them later: a) the professors of Polytechnic Institutes had a general view on Physics (as a whole system), b) they had also a considerably more consistent (rich) scientific research activity than their colleagues teaching to the first 2 academic years of the Romanian Physics faculties: prof. Ion Agârbiceanu (PIB, b. 1907) – 27 published scientific works, prof. Dumitru Bârcă-Gălăţeanu[1] (PIB, b. 1903) – 15 published works, prof. Aurel Potop (University of Bucharest, UB, b. 1903) – 8 published works, prof. Vasile Mihu (UB, b. 1912) – 3 published scientific works up1957 [6]. For this reason, it is not at all surprising that eventually I have chosen (in 1963) to accomplish my didactic Physics apprenticeship at Bucharest Polytechnic Institute.

In 1957, I begun also the apprenticeship in the scientific research in Physics: after an elementary experimental study of the useful magnetic field between the poles of a 25 MeV betatron and inside an mono-phase alternator (suggested and lead by the assistant professor Florin Gheorghiu, UB) – second prize at the Conference of students researches from Bucharest center, I have chosen – together with my colleagues Ionela Voinea-Stanciu and Simona Dimitriu – to study the first magnetization curve of the complex magnetic sample – a steel bar, communicated at the national research Conference of the students from Jassy (September 1957). At the end of the academic year 1959-1960, I had the examinations for the obtainment of my Physics Bachelor degree:

a) I was very much honored by the kind acceptance of Academician Şerban Ţiţeica (assisted by the outstanding, but still very young then – Prof. Mihai Gavrilă) to supervise the elaboration of my Bachelor Dissertation "The continuous (bremstrahlung) X-radiation". When I read the documentary materials kindly given to me by my supervisors, I had the surprise to find that all relations were written in the non-dimensional (atomic) Hartree's system of physical quantities and units[2], where all quantities have the same dimension: 1, hence it was not possible to distinguish between cause, effect, conditioning parameters, etc.

[1]Professor Dumitru Bârcă-Gălăţeanu was (after Professor Radu Ţiţeica, from University of Ploieşti) the second Romanian researcher who studied complex systems (different chemical molecules) [7].

[2]By means of his work "The waves mechanics of an atom …", Cambridge Philosophical Society, **24**(1) 89-110(1928) [which described the electrons motions in solids], Douglas Hartree (1897-1958, an outstanding British mathematician and physicist), has created his (atomic) system of physical quantities and units, all physical quantities being described by numbers, exclusively!

Given being that I was not able to accept the total absence of syntax (and, implicitly, of semantics) in these theoretical materials, I decided that I have to: (i) translate all corresponding relations in a dimensional system of physical quantities and units (namely, in the electrostatic CGS system), (ii) check the validity of each relation and establish its validity field (the part of semantics). This was an extremely cumbersome task and it hindered the preparation of the:
b) final oral examinations, consisting in the check of knowledge of all academic lectures taught in the frame of our Physics faculty studies program. I have to underline that:
(i) the knowledge check referred only to some isolated Physics parts, as Mechanics, or Thermodynamics, or Electromagnetism, or Optics, or Atomic Physics, etc.,
(ii) this examination referred to only 3 arbitrarily chosen (by the Bachelor candidates) Physics parts. Given being I was interested only by the Physics learning as a whole, I renounced to any special preparation, for this examination, focusing all my efforts towards an establishment of the Syntax and Semantic of my Bachelor dissertation. In this manner, I acted with full consciousness for a higher Information quality, risking and losing the possibility of a good personal classification at the end of the Physics faculty.

After the end of the Physics faculty, I have chosen to work at the "Electronica" plants from Bucharest, where – during the first 3 activity years (1960-1963) – I achieved the revision of all lectures (as a whole) from the Physics faculty, ensuring so a solid background of my professional activities in the frame of the Polytechnic Institute of Bucharest, beginning from the fall of 1963. I consider that these facts represented a direct implication of Chomsky's assertion of the existence of a universal grammar, inscribed in the mind (and DNA genome) of each man, even from his birth. Given being my own choice, I lost any possibility to be classified as a possible teaching assistant at Physics faculty, but I won more at the national and even international levels!

This could be an example of the opinion expressed[1] by Academician Şerban Ţiţeica (1908-1985): "The research activity means to act in unknown fields, with uncertain results. Who does not know to risk, will not obtain nothing!".

As a consequence of my scientific activities (1963-1966) under the leadership of Prof. D. Bârcă-Gălăţeanu [7], I succeeded to: a) elaborate - in the frame of his research team - some papers, and: b) become a Ph.D. student in the field of Optics and Spectroscopy, with Acad. Margareta Giurgea (Bucharest Physics faculty) as adviser.

[1]In the frame of a Romanian radio emission from 1970, according to the review "Știință și Tehnică" (Science & Technique), **65**(61) p. 75, November 2016.

4. 1967-1982: First own publications and a certain recognition of the obtained scientific results

4.1. Main scientific results

The elaboration history of the first 4 scientific works is given by Table 1.

Table 1

Basic data of the first 4 own published papers

No.	Publishing scientific review	Reception date by the sci. review	Activity place at the work elaboration	Studied topic	Author's position from total of
1	Bul. Inst. Polit. Bucarest **29**(2) 25-41(1967)	December 1, 1965	"Electronica" Plants from Bucharest	Complex magnetic materials	1st from 1
2	Revue Roumaine de Physique **12**(1) 53-61(1967)	June 5, 1966	Polytechnic Institute of Bucharest	Complex materials IR spectroscopy	3rd from 4
3	Bul. Inst. Polit. Bucarest **29**(5) 49-55(1967)	May 27-29, 1966	Polytechnic Institute of Bucharest	Complex materials IR spectroscopy	3rd from 5
4	Revue Roumaine de Physique **12**(10) 973-978(1967)	July 10, 1967	Polytechnic Institute of Bucharest	Complex materials IR spectroscopy	3rd from 4

We have to remark also that the first work [D. Iordache "L'étude de la courbe dynamique d'aimantation d'un ferrite mixte de manganèse et zinc, de haute perméabilité", Bul. Inst. Polit. Bucarest, **29**(2) 25-41(1967)] pointed out the presence of the power laws and of some phase transforms in the magnetization processes of the studied complex material[1], before the corresponding specification by P.W. Anderson, the Physics Nobel prize laureate (1972) for the study of Complexity. The selection manner – among a huge number of possible correlations – of the most suitable one was established in detail by the work [8]. It was pointed out that while a correlation with a rather high coefficient $|r|$ ($1 - |r| << 1$), but with a low compatibility coefficient $\lambda = \frac{V(r)}{(1-|r|)^2} < 1$ [where $V(r)$ is the variance of the correlation coefficient] had to be rejected, another one with a considerably lower correlation coefficient $|r'| < |r|$, but with a better compatibility coefficient $\lambda' = \frac{V(r')}{(1-|r'|)^2}$ has to be kept into consideration.

[1]Given being most scientific publications become out-dated only few years after their publication (see [15], pp. 161-162), such an analysis is useful (after 50 years) also for the indicated work. The findings are not at all surprising: there resist only the somewhat fundamental elements, namely those related to the Complexity theory (the power laws and the phase transforms).

These results were internationally recognized: e.g. the only one reference for a rigorous mathematical processing given by the huge scientific review (several hundreds of references) of the work [9], p. 189 (on the C-H spin-spin coupling constants) has found: "The need to restrict correlations to homogeneous groups and to use rigorous mathematical procedure were stressed by Iordache [216]" (i.e., our work [8]).

A detailed study of the information accuracy obtained from the IR spectra (allowing the evaluation of the vibrational anharmonicities) was reported by our work [10].

The series of studies concerning the compatibility of the semiempirical relations with the experimental data was completed by the work [11].

The possibilities to reach an optimal information processing in the frame of some huge studies, by means of some specific logical schemes were investigated by the works [12] (for the spectroscopical study of the molecular structure) and [13] (for the systematic study of the physical laws and principles).

4.2. Fall 1967-Spring 1976: First cooperations in different scientific fields and activities of students' initiation in the scientific research

After the publishing of my first 4 scientific works, I was promoted (fall of 1967) as assistant professor, with teaching tasks at the faculty of Electronics and Telecommunications of the Bucharest Polytechnic Institute. Between the years 1968-1976, I had another 8 scientific publications in the field of Spectroscopy, one in the field of Nuclear Magnetic Resonance, and 2 in the field of Dielectrics, with the cooperations of Prof. Bârcă-Gălăţeanu (as adviser of 6 works in Spectroscopy) and Prof. Doina Gavrilă (3 works), the elaborated works being cited 5 times in the international specialty literature. Concomitantly, some of my students begun their activities of initiation in the scientic research, i.e.: 1 student in the fall of 1967[1], a second one in 1972, 9 students in 1974, another 5 in 1975, and not less than 21 students in the Spring of 1976 [14]. I have to mention here also that in the fall of 1976 I was promoted as associate professor.

I have to mention also that in December 1975 I had a documentation period of 2 weeks in Hungary, mainly to the Technical University of Budapest.[2]

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[1]Eng. Adrian Rusu (1946-2012, then student of the 5th academic year of the section of Physicists Engineers), 2nd prize at the National Conference of Students Scientific Research (University of Timişoara) for a work in the field of Magnetic Measurements, who became later (1994) a correspondent member of the section of Information Science and Technology of the Romanian Academy.

[2]I admired mostly the very good endowment of the Central Library of the Technical University of Bucharest and the deep specialization in Molecular structures of the Institute of Chemical Physics from Budapest.

4.3. Fall 1976-Spring 1982: More studies in different scientific fields and activities in the field of students' scientific education

Between the years 1976-1982, I had another 8 scientific publications in the field of *Magnetism* (main collaborators profs. L. Daniello, Ion M. Popescu, C. Cristescu, A. Lupaşcu, Gh. Stanciu) and 2 in the field of *Magnetic measurements devices* (main collaborator prof. L. Frangu[1]), 4 in the field of *Thermodynamics* (of Cryogeny, particularly, main collaborators assist. profs. Gh. Lăzărescu and Vl. Iancu), 1 in the field of *Dielectrics* (Prof. Doina Gavrilă), and a last one in the field of *Information science* (collaborator teaching assist. D. Alexandriu).

Besides the activities of students' initiation in the scientific research, there begun also the activities of students' preparation for the students' scientific (professional) contests. The most remarkable obtained results are synthesized by Table 2.

Table 2

Most important results obtained in the activities of students' initiation in the scientific research and preparation for their scientific (professional) contests, 1978-1982

Spring of the Year	Students' initiation in the scientific research (participant students/works)		Students' preparation for their scientific (professional) contests	
	Polytechnic Institute stage	National stage	Prizes at the Poly-technic Institute stage	Prizes and mentions at the National stage
1977	27 (7)	14 (2 published)	-	-
1978	21 (11)	-	7 - first acad. year 1 - second acad. year	Radu Ispas – mention 1st academic year
1979	24 (11)	-	2 - first acad. year 6 - second acad. year	Dan Suciu – 3rd prize 2nd academic year
1980	35 (16)	-	3 - first acad. year 2 - second acad. year	Liviu Iftode –1st prize 1st academic year
1981	28 (12)	-	4 - first acad. year 3 - second acad. year	Liviu Iftode–2nd prize 2nd academic year
1982	25 (10)	13 (4)	3 - first acad. year 4 - second acad. year	Sorin Chira, 1st prize 2nd a.yr.&2M – 1st a.yr

4.4. Fall 1976 - Spring 1982: Additional didactic activities at the national level

In the Fall of 1978, I was (the first) summoned by our Education Ministry for the preparation of Physics subjects for the admission in all Romanian faculties. Prof. Ion M. Popescu and I were the only ones authors of admission subjects during the years 1978-1979 [16a, b]. I consider that together with Prof. Ion M. Popescu, we had an important contribution to the leveling (of the Romanian high-schools from different regions) at a considerably improved standard.

[1]Now Prof. Ph.D. Eng. at University of Galaţi.

Similarly, in the Fall of 1979 I was nominated by the same Ministry in the National Commission for the organization of the Romanian Physics Olympiads. In this quality, even from the first year (1979), I was the unique author of the Electromagnetism problems intended to the 10^{th} form and to the final selection of the Romanian team for the 11^{th} International Physics Olympiad (from Moscow), respectively, at the Romanian Olympiad from Odorheiul Secuiesc.

During the years 1977-1979, there were elaborated the devices for: a) magnetic measurements in low frequencies (JF), and: b) various basic electrical measurements. Both these devices were omologated (at the level of prototype – that for magnetic measurements, and of experimental model – that for electrical measurements) by the Office for Education devices of the Romanian Education Ministry. In following, the devices JF were manufactured in 1000 pieces and sold to different high-schools, Universities and research institutes by the Polytehnic Institute of Bucharest (PIB) [17].

The very good (high) appreciation of the leadership of the Polytechnic Institute of Bucharest for the activities in the field of Information Science and Technology accomplished in the frame of the Physics Department was reflected also by the promotions from the Fall of 1982 (the last ones up to 1990): Associate Professor (then, at about 36 years) Paul E. Sterian (for his outstanding results in the frame of IT, especially) [18] and – as Professor – myself.

5. Fall of 1982 – Spring of 1992: Prevalence in the frame of our activities of some didactic applications of the Information Science

5.1. The main obtained scientific and didactic results

Despite of the considerable difficulties of scientific difficulties (due to Romania's isolation in this period), our scientific research activities continued, being published the main obtained results in the frame if *Cryogeny* (10 works), *Magnetism* (7 works, 2 representing applications), *Dielectrics* (7 works), applications of *Thermodynamics* (3), *Spectroscopy* (2), *Mechanics* (1) and *Computing methods* (1). The effects of: a) our country isolation, b) fact that Romania didn't have then (before 1990) a scientific "critical mass" in the field of the scientific Information theory, consisted in the total absence of cited works between 1977 and 1993: while during the 48 scientific activities works (1967-2015) there were cited (57 citations) 29 of my published works, among my more than 40 works published between 1977 and 1993, none was cited! In such conditions, my activity (and that of my colleagues) was concentrated on the didactic applications (of the Information Science, particularly).

Aiming to compensate partially the absence of international specialty scientific information by some syntheses of certain Romanian specialists, we organized -

beginning from November 11, 1982[1], up to March 28, 1986, with final conclusions in December 2004 and January 2005 - the didactic Seminar "Structures of Physics", with a total number of 44 lectures taught both by some of the best specialists of the Physics Department and other outstanding researchers from other Romanian institutions. Among the lecturers from other institutions, we can mention: Acad. Vlad Ionescu (Department of Control Systems, faculty A&C[2] – PIB) – 1 lecture, Prof. T. Toro (Univ. Timişoara) – 1, Prof. Octavian Stănăşilă (PIB Mathematics Department) – 1, dr. N. Ionescu-Pallas (Inst. Atomic Physics, Măgurele) – 1, Prof. Cornel Nistor [Physics fac., Bucharest University (UB)] – 1, Prof. I. Druică-Zeletin (Inst. Civil Engineering, Bucharest) –1, Prof. C. Cioacă (Chem. fac., UB) – 1, teaching assist. Doru Alexandriu (bachelor of a French University) – 2, while from the professors of the Physics Dept. lectured (taught): Professors George Moisil (2), Ion M. Popescu (2), Ilie Cucurezeanu (1), Cornelia Moţoc (1), Paul Sterian (2), C. Cristescu (1), T. Creţu (1), L. Fara (1), V. Popescu (1), Mircea Stan (3), G. Macarie (1), Vladimir Iancu (4). The connections between the various discussed topics were ensured by 4 debates ("round tables"), and other 9 personal (D.I.) interventions [14].

Besides the lectures of the Seminar "Structures of Physics", the Technical Printing House of Bucharest published in the Spring of 1984 the work [19], with a preface (foreword) of Acad. Ioan Ursu. The first words of this book were "A set of physical *information*, which has …" (chapter 1 "General Notions and Methods of Physics").

Between 5 and 14 July 1983, Romania organized at Bucharest the 14th International Physics Olympiad (IPhO). The participant high-school students (from 17 countries) had to solve 4 problems, myself being the author of 1½ problems (from these 4, namely the Electromagnetism problem and the data processing part of the experimental problem). After many years of middling (mediocre) behaviors, our team of 5 high-school students obtained a considerably better result, classifying as the 2nd one, after the Soviet Union team. On this occasion, I met first time Dr. Waldemar Gorzkowski (Poland), who became then General Secretary of IPhO's, mission accomplished outstandingly up to his much regretted death (July 15th, 2007, at the 38th IPhO from Isfahan – Iran).

There followed 2 years (1984-1985) of didactic search and then the national commission for the Physics Olympiads decided the cooperation – for the selection

[1] In strong connection with the organization of the Seminar "Structures of Physics", on 1st November 1983 we begun the printing of some yearly materials intended to the improvement of PIB students preparation at the Physics discipline [14] (about 10 pages yearly, involving the subjects of the professional contests, as well as some proposed problems for the PIB contest of Physics problems solvers. There were printed 11 such materials, up to May 1993, inclusively.

[2] Faculty of Automations (Control Systems) and Computers (A&C).

of the national teams for the IPhO's - with the Physics faculties from Timişoara (1986, 1987, local scientific leader (LSL) – Prof. Octavian Birău), Craiova (1988, LSL – Prof. Florea Uliu) and Iaşi (1989, LSL – Prof. Gheorghe Popa).

The selection score of each student was found as an average between his results to the set of problems required by the "local" University and to the set of problems given by the professors of the Bucharest's University and Polytechnic Institute (coordinators – prof. Gheorghiţă Vlăducă and myself, respectively).

This selection system was very efficient, and – together with the high quality of the scientific information provided to the Romanian enlarged team in this period (1983-1997) – it ensured a prominent place of our team in the international classifications: 2^{nd} place the 17^{th} IPhO (London, 1986), 1^{st} place at 18^{th} IPhO (Jena - GDR, 1987), 1^{st} place at 19^{th} IPhO (Bad Ischl - Austria, 1988), … 2^{nd} place at 27^{th} IPhO (Oslo, Norway, 1996).

The most important high-school professors (many of them became later Ph.D. Physics) with high contributions to the IPhO's and Romanian national Olympiads were: Romulus Pop (important contributions to the IPhO's from 1987 - Jena, 1989 - Warszaw, 1995 - Canberra, Australia and 1996 - Oslo, Norway), Andrei Petrescu (Bucureşti), Constantin Corega (Cluj), Costică Costan (Suceava), Dorel Haralamb (Piatra Neamţ), etc. – high value contributions at the National Physics Olympiads, and – by means of their pupils – at the IPhO's.

I have to underline also that the background of the Physics preparation of the Romanian high-school students was ensured in following by the centralized admission in the Universities (authors of Physics problems: professors I.M. Popescu, Dan Alexandru Iordache, Costantin Cristescu, Paul E. Sterian, Ioan Căplănuş) [20].

An important role for the preparation of our best high-school students for their later academic studies was accomplished and continues after 27 years to be fulfilled by the review *"Evrika!"*, initiated (in September 1990) and coordinated with an admirable abnegation by Professor Emilian Micu and his wife – Prof. Florinela Micu (both from the city of Brăila), who had the continuous support of a rather large (about 50 collaborators) redaction group, among whom Prof. Eng. Romulus Sfichi (Suceava) was clearly the most implicated and the most efficient. After 12 didactic papers published between 1969 and 1992 in other Romanian reviews intended to high-schools, I begun in November 1993 my cooperation with Prof. Emilian Micu and the review *"Evrika!"*.

There continued also the activities of initiation of students in the scientific research and of their preparation for the Physics professional contests (see table 3).

Table 3

Most important results obtained in the activities of students' initiation in the scientific research and preparation for their scientific (professional) contests, 1983-1992 [14]

Spring of the Year	Students' initiation in the scientific research (participant students/works)		Students' preparation for their scientific (professional) contests	
	Polytechnic Institute stage	National stage	Prizes at the Poly-technic Institute stage	Prizes and mentions at the National stage
1983	45 (17)	-	2 prizes 1st acad. yr. 5 prizes 2nd acad.yr.	S. Foşălău –1st prize + 1M 1st a.yr. Alex.Taşcă 2nd prize + 4 M 2nd acad.year
1984	21 (11)	4 (2)	2 prizes& 2 mentions 1st acad. year 5 prizes & 1 mention 2nd acad. year (A&C) 1 prize & 1 mention 1stacad.yr.Chem.Phys 1prize2ndac.yr.Ch.Ph.	Gabriela Marinescu 1st prize – 1st acad.yr. Mihai Petrescu 1st prize 2nd acad.yr. A.Privache 2nd prize – 2ndacad. +1SpP Doina Enciu – 2nd prize, 1st yr. J. Nica – 3rdprize-1st yr. Ch.Ph.
1985	60 (22)	25(4)publ. works 22(5) communic. Nat. Stud. Conf.		Marius Cenţiu 1st P., Ion Stoica 2nd P& 2M – 1st acad.yr. A&C Doina Enciu 1st pr.1st yr. Chem. Phys.
1986	32 (24)	26(7) communic. Nat. Stud. Conf.	1 prize & 6 mentions 1st acad. yr. 2 prizes & 4mentions 2nd acad. yr.	Cr. Georgescu 1st P + 6 M – 1st acad. yr. Jana Iorga – 1st prize, S.Păuna 3rdP+5M-2ndy
1987	40 (13)	-	1st P +1 M – 1st ac.yr. 1st P + 2nd P + 2-3rd P 2nd ac.yr. (from 6 P)	Mihaela Dumbravă 1st P – 1st ac.yr. V. Damian-Iordache 1stP, Liviu Badea 2ndP &2 × 3rd P-2nd ac. yr.
1988	46 (22) Emil Laurenţiu	-	5 prizes (from 5 awd) 9 M (from 14 awd) 1st a.yr. – 3M 2nd yr.	Ciprian Necula 1st P Radu Bălan 3rd P + 1M – 1st acad. year
1989	56 (21) Andrei Pascovici Radu Băcioiu	4 (1) communi-cations at the Nat. Stud. Conf.		Dan Popa 1st P, 1st yr. Radu Bălan 1stP & C. Necula 2nd P -2nd a.yr.
1990	27 (15) Iacob Petrescu	Non-organized National Conference	Missing Data	Non-organized National Contest
1991	17 (10)	Non-organized National Conference	Missing Data	Non-organized National Contest
1992	19 (7)	Non-organized National Conference	Mihaela Ţâncu 1st Prz Prizes 2 & 3 (from 2 awd) + 1 M (from 2 awd) - 1st acad. year	Non-organized National Contest

A question addressed by several American professors to Acad. Ion Dumitrache (around of 1995): "But what happened to you: before, when we had some Romanian students, we knew that the given tasks will be very well fulfilled, but now …?" [additionally, the experiment with my own children!].

5.2. Fall 1987 – Spring 1992: Transition period on the scientific plan

Given being the: a) outstanding results obtained by the Romanian teams at the IPhO's from the 1983-1997 years were not though sufficient, as well as: b) the obvious rise of the Information Technologies and Informatics, beginning from July 1987 we launched the cooperation with the Office for teaching devices of the Romanian Education Ministry in order to elaborate some Informatics products intended to the:

a) Physics of Condensed Matter chapter from high-schools [21],
b) Elements specific to Universities of the same topic,
c) Applications of Spectroscopy for the technical Universities disciplines.

The next topic, intended to the applications of the Electromagnetism in high-schools and launched in the Fall of 1989, was not completed due to the changes in the Romanian research organization system. The new research Secretary of State – Prof. dr. Eng. Andrei Ţugulea (Electrical Engineering Dept., PIB) has introduced in the Fall of 1990 the system of research contracts, with clearly established obligations of the researchers, but also with precise financial rights[1]. Continuing our scientific concerns, we have elaborated then some synthesis works in the field of didactic applications of data processing. Some of these results were presented [22] to the 4-th International Conference on Physics Computing, organized by de Groot R. A. and Nadrchal J. at Prague in 1992, where they "met" certain somewhat similar works [23] of the research group of Professor Pier Paolo Delsanto from Politecnico di Torino. A certain similarity of these works was remarked by Prof. Aurelia Stepanesco from this University, and then by Professor Delsanto himself, who invited me in the Fall of 1992 at Turin, to explore the possibilities of some scientific cooperations.

[1] Between 1977 and 1994 I was the director of 21 contracts of scientific research with our Education Ministry and of other 2 scientific contracts with the Romanian Council for Science and Technology (1980-1984). My travel to Turin from 1992 was financed in the frame of the contract 18-91-7/1991 with the Romanian Education and Research Ministry "Experimental and theoretical studies on the behavior of some magnetic, super-conducting and dielectric materials at low temperatures (between the liquid nitrogen and the room temperatures)", directed by me.

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