

## CURRICULUM VITAE

**HALANAY ANDREI , profesor, doctor în matematică , Facultatea de Stiinte Aplicate , Departamentul de Matematică si Informatica , Universitatea Politehnica Bucureşti.**

### 1.DATA ȘI LOCUL NAȘTERII:

#### STUDII :

- 1967-1971, Liceul Dimitrie Cantemir,Bucureşti.
- 1971-1975, Facultatea de Matematică , Universitatea din Bucureşti . Media de absolvire: 9,94. Diploma de licență în matematică , nota 10.
- 1975-1976, Facultatea de Matematică,Universitatea din Bucureşti, Specializare în Analiză matematică (anul V) . Media 10. Lucrare de specializare notată cu 10. Diploma de specializare cu recomandare pentru învățământul superior și cercetare științifică.

#### TITLURI:

- Doctor în Matematică, Facultatea de Matematică, Universitatea din Bucureşti , 1989. Teza de doctorat : Legături între analiza armonică a operatorilor și analiza numerică a sistemelor hiperbolice. O teoremă de existență a subspațiilor invariante pentru unele contracții cu raza spectrală unu, conducător științific profesor doctor Ion Colojoară.

### 2.FUNCȚII DIDACTICE ȘI LOCURI DE MUNCĂ

- 1976 – 1982 : Profesor de Matematică la Liceul Industrial nr.25 (actualul liceu teoretic Traian) din Bucureşti. În anul 1981 am promovat examenul de definitivare în învățământ cu media 10.
- 1982 – 1990 : Asistent la Catedra de Matematică nr.1 din Universitatea Politehnica Bucureşti.
- 1990 – 1998 : Lector la Catedra de Matematică nr.1 din Universitatea Politehnica Bucureşti.
- 1998 –2005: Conferențiar la Catedra de Matematică nr.1 din Universitatea Politehnica Bucureşti.
- 2005-prezent: Professor la Catedra de Matematică nr.1 din Universitatea Politehnica Bucureşti. ate.
- 2010- abilitare (drept de conducere doctorate)

### **3. Abilitati lingvistice (1= slab, 5= excelent)**

Limba1: Engleza, Scris 4, Citit 5, Nivel conversational 4.

Limba2: Franceza, Scris 4, Citit 5, Nivel conversational 4.

Limba 3: Rusa, Scris 2, Citit 4, Nivel conversational 1.

### **4. Cuvinte cheie**

**Specialist :** analiza matematica, teoria operatorilor, model functional Nagy-Foias, spectru, factorizare, functii analitice, algebre de functii, ecuatii diferențiale, stabilitate, bifurcatii, control, servomecanisme, ecuatii cu intarziere, varietate centru, sisteme cu comutare

**Generalist :** matematica, modele matematice in tehnica, modele matematice in biologie.

### **5. Mentiuni suplimentare :**

1. Membru in Comisia de contestatii a CNATDCU, 2017-
2. Membru al Comisiei de matematica a CNATDCU, 2012-2016 .
3. Membru in Comisia de etica a UPB, 2012-2016.
4. Doua teze in matematica sustinute sub conducerea mea : Alexandru Negrescu si Irina Badralexi. Amandoi sunt asistenti la Dep. Matematici Aplicate din UPB.
5. Co-organizator al Minisimpozionului *Dynamical systems Medicine and Biology* in cadrul conferintei internationale **Emerging Trends in Applied Mathematics and Mechanics**, Cracovia, 2018.
6. Co-organizator al Minisimpozionului *Delay Differential Equations in Biology and Medicine* in cadrul conferintei internationale **Emerging Trends in Applied Mathematics and Mechanics**, Perpignan, Franta, 2016
7. Co-organizator al Sesiunii Speciale *Mathematical Modeling of Some Medical and Biological Processes*, in cadrul celui de-al 8-lea Congres al Matematicienilor Romani, Iasi, 2015.
8. Co-organizator al Sesiunii Speciale *Delay Differential Equations Models in Life Sciences, Engineering and Economics* din cadrul International Conference of Nonlinear Problems in Aviation and Aerospace (ICNPAA), Narvik, Norvegia, 2014 si La Rochelle, Franta, 2016.
9. Membru in Editorial board al revistei **Mathematics in Engineering, Science and Aerospace**, (SUA).
10. Profesor invitat la a 30-a Scoala de Vara in Control Automat, Grenoble, Franta, 22-26 Iunie 2009
11. Co-organizator al sectiunii *Control of aviation servomechanisms and interaction with structure*, ICNPAA, 2008, Genova, Italia.
12. Co-organizator al conferintei “*Modelisation mathematique en biologie et en medicine*”, Craiova, 2006.

## LISTA DE LUCRĂRI

### Capitole in volume apărute în edituri internaționale

1. C. Murea, A.Halanay (2017), Uniform Estimation of a Constant Issued from a Fluid-Structure Interaction Problem, System Modeling and Optimization, Lorena Bociu, Jean-Antoine Désidéri, Abderrahmane Habbal (Eds.), IFIP Advances in Information and Communication Technology, Vol. 494, p. 292-302 , ISBN 978-3-319-55794-6, Springer, Berlin.
2. R. Rădulescu, D. Cândeа, A. Halanay (2017), A Complex Mathematical Model with Competition in Leukemia with Immune Response - An Optimal Control Approach, System Modeling and Optimization, Lorena Bociu • Jean-Antoine Désidéri, Abderrahmane Habbal (Eds.), IFIP Advances in Information and Communication Technology, Vol. 494, p. 430-442 , ISBN 978-3-319-55794-6, Springer, Berlin
3. C. Murea, A.Halanay (2013), Embedded domain technique for a fluid-structure interaction problem, System Modeling and Optimization, D. Homberg, F. Tröltzsch eds., IFIP Advances in Information and Communication Technology, vol 391, p. 358-367, ISBN 978-3-642-36061-9, Springer, Berlin.
4. A.Halanay, C. Murea (2013), Fixed domain algorithms in shape optimization for stationary Navier-Stokes equations, System Modeling and Optimization, D. Homberg, F. Tröltzsch eds. IFIP Advances in Information and Communication Technology, vol 391, p. 378-386, ISBN 978-3-642-36061-9, Springer, Berlin.
5. A. Halanay, I. Ursu (2011), Stability analysis of equilibria in a switching nonlinear model of a hydrostatic electrohydraulic actuator, in *Mathematical Analysis and Applications in Engineering Aerospace and Sciences*, S. Sivasundaram (ed). Cambridge Scientific Publishers, ISBN 978-1-904868-79-8
6. S. Balea, A. Halanay, F. Ursu, I. Ursu (2009), Geometric Methods in Control Synthesis for Electrohydraulic Servoactuators in Servoelastic Framework, *Mathematical Problems in Engineering and Aerospace Sciences : ICNPAA 2008*, S.Sivasundaram (ed), pp. 51-57, Cambridge Scientific Publishers, ISBN 978-1-904868-70-5.
7. A.Halanay, I. Ursu (2009), Stabilization in Switching Models for Electrohydraulic Servoactuators in a Servoelastic Framework, *Mathematical Problems in Engineering and Aerospace Sciences : ICNPAA 2008*, S.Sivasundaram (ed), pp. 73-80, Cambridge Scientific Publishers, ISBN 978-1-904868-70-5.

8. A.Halanay, I. Ursu, C. A. Safta, F. Ursu (2009), Control Synthesis for Electrohydraulic Servoactuators in a Servoelastic Framework, *Mathematical Problems in Engineering and Aerospace Sciences : ICNPAA 2008*, S. Sivasundaram (ed), pp. 716-723, Cambridge Scientific Publishers, ISBN 978-1-904868-70-5.
9. A. Halanay, C. A. Safta, F. Ursu, I. Ursu (2007), Stability analysis and tracking control synthesis of a hydraulic servo in a servoelastic framework: backstepping design, *Mathematical Problems in Engineering and Aerospace Sciences : ICNPAA 2006*, S.Sivasundaram (ed), pp. 839-846, Cambridge Scientific Publishers, ISBN 978-1-904868-56-9.
10. A. Halanay, F. Popescu, C. A. Safta, F. Ursu, I. Ursu (2005), Stability analysis and nonlinear control synthesis for hydraulic servos actuating primary flight controls, in *ICNPAA 2004*, S. Sivasundaram editor, pp.243-251, Cambridge Scientific Publishers.
11. A.Halanay (1987), Extension of the (BCP)-technique, in *Operators in Indefinite Metric Spaces, Scattering Theory and Other Topics* (H. Helson, B. Sz.-Nagy, F. H. Vasilescu, D. Voiculescu, editori), Birkhäuser, pp.195-201, ISBN 3-7643-1843-0.

### Lucrări în reviste internationale

1. K. Amin, I. Badralexi, A. Halanay, R. Mghames (2021), A stability theorem for equilibria of delay differential equations ia a critical case with application to a model of cell evolution, Mathematical Modeling of Natural Phenomena, vol. 16, <https://doi.org/10.1051/mmnp/2021021> (Franta) (revista ISI, impact factor 1, 642, SRI 0,775) (ISSN 0973-5348).
2. D.Enciu, Andrei Halanay (2021), Stability for a delayed switched nonlinear system of differential equations in a critical case, International Journal of Control, (revista ISI, Impact factor 3, 47, SRI 1,042-2020 (1,299-2017), ISSN 0020-7179). DOI:10.1080/00207179.2020.1862423
3. A. Halanay, C.A. Safta (2020), A critical case for stability of equilibria of delay differential equations and the study of a model for an electrohydraulic servomechanism, Systems & Control Letters, 142, 104722 ( revista ISI, Impact factor 2, 762, SRI 2, 276) (ISSN 0167-6911).doi 10.1016/j.sysconle. 2020. 104722.
4. R. Radulescu, D. Candea, A. Halanay (2016), Optimal control analysis of a leukemia model under imatinib treatment, Mathematics and Computers in Simulation 121,1-11 (Elsevier) (revista ISI, Impact Factor1,218, SRI 0,953) ( ISSN 0378-4754).
5. D. Candea, A. Halanay, R. Radulescu (2016), Stability analysis of some equilibria in a time-delay model for cell dynamics in leukemia including the action of the immune system, MESA, vol. 7, no2, 315-339 (SUA).
6. Andrei Halanay, Cornel Marius Murea and Dan Tiba (2016), Existence of a Steady Flow of Stokes Fluid Past a Linear Elastic Structure Using Fictitious Domain, J. Math. Fluid Mech., 18 , 397-413, DOI 10.1007/s00021-015-0247-0

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7. A. Halanay, L. Pandolfi (2015), Approximate controllability and lack of controllability to zero of the heat equation with memory, *J. Math. Anal. Appl.* 425 (2015) 194–211.(revista ISI, Impact factor 1, 064; 5-Years impact factor 1, 151, SRI 1,104) (ISSN 0022-247X).
8. A. Halanay, D. Canea, R. Radulescu (2015), Stability analysis of equilibria in a delay differential equations model of CML including asymmetric division and treatment, *Mathematics and Computers in Simulation* 110 (2015), 69-82, DOI:10.1016/j.matcom.2014.04.008 (Elsevier) (revista ISI, Impact Factor 1,218, SRI 0,953) ( ISSN 0378-4754).
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10. A. Halanay, L. Pandolfi (2014), Lack of controllability of thermal systems with memory, *Evolution Equations and Control Theory*, vol. 3, no. 3, 485-497 ( revista ISI , Impact factor 1,049, SRI 0,834) (AIMS Journal, SUA) (ISSN 2163-2480 (e)).
11. A. Halanay, D. Canea, R. Radulescu (2014), Existence and Stability of Limit Cycles in a Two-delays Model of Hematopoiesis Including Asymmetric Division, *Mathematical Modeling of Natural Phenomena*, vol.9, no.1, 58-78. (Franta) (revista ISI, impact factor 0,952, SRI 0,854) (ISSN 0973-5348).
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13. I. Ursu, A. Toader, A. Halanay, S. Balea (2013), New stabilization and tracking control laws for electrohydraulic servomechanisms, *European J. of Control* 19, 65-80. (revista ISI, impact factor 1,944; SRI 1, 308) (ISSN 0947-3580)
14. A.Halanay, C. Murea, C. A. Safta, (2013), Numerical Experiments for Stabilization of the Heat Equation by Dirichlet Boundary Control, *Numerical Functional Analysis and Optimization*, vol. 34, no.12, 1317-1327, ISSN: 0163-0563. (revista ISI, impact factor 0,852, SRI 0,691).
15. S. Balea, A. Halanay, I. Ursu (2013), New results on the problem of the stabilization of equilibria for models of electrohydraulic servoactuators, *Discrete and Continous Dynamical Systems*, series S, vol. 6, no. 6, 1551-1567, ISSN 1531-3492. (revista ISI, Impact factor 0,781, SRI 0,626) (SUA).
16. A. Halanay, L. Pandolfi (2012), Lack of controllability of the heat equation with memory, *Systems & Control Letters*, 61, 999-1002, (revista ISI, impact factor 2, 550, SRI 2,276)
17. A. Halanay (2012), Periodic solutions in a mathematical model for the treatment of chronic myelogenous leukemia , *Mathematical Modeling of Natural Phenomena*, vol.7, no.1, 235-244. (Franta) (revista ISI, impact factor 0,952, SRI 0,854) (ISSN 0973-5348).

18. S.Balea, A. Halanay, I. Ursu (2010), Coordinates transformation and stabilization for switching models of actuators in servoelastic framework, *Applied Mathematical Sciences*, vol. 4, no 73-76, 3625-3643.
19. A. Halanay, A. Ionita, C. A. Safta (2010), Hopf bifurcations through delay in pilot reaction in a longitudinal flight, *Nonlinear Dynamics*, 60(3), pp. 413-423, DOI : 10.1007/s11071-009-9605-x.. (SUA) (revista ISI, Impact factor 3, 464, SRI 2,285) .
20. A. Halanay, D. Tiba (2009), Shape optimization for stationary Navier-Stokes equations, *Control and Cybernetics*, vol. 38, no. 4, 1359-1375. (Polonia )(revista ISI, Impact factor 0,3)
21. A. Halanay, I. Ursu (2009), Stability of some switched nonlinear systems with applications to control synthesis for electrohydraulic servomechanisms, *IMA Journal of Applied Mathematics*, vol. 74, no 3, 361-373; ( Anglia) (revista ISI, Impact factor 0,945, SRI 0,871).
22. A. Halanay, C. A. Safta, I. Ursu, F. Ursu (2009), Stability analysis for a nonlinear model of a hydraulic servomechanism in a servoelastic framework, *Nonlinear Analysis: Real World Applications*, 10, 1197-1209 (SUA) (revista ISI, Impact factor 2,519, SRI 1,491).
23. M. Adimy, F. Crauste, A. Halanay, M. Neamtu, D. Opris (2006), Stability of Limit Cycles in a Pluripotent Stem Cell Dynamics Model, *Chaos, Solitons and Fractals*, 27(4), 1091-1107. (Elsevier) (revista ISI, Impact factor 1, 448, SRI 1,329).
24. A.Halanay, C. A. Safta (2005), Stabilization of some nonlinear controlled electrohydraulic servosystems, *Applied Mathematics Letters*, vol.18, no.8, pp.911-915, (SUA) (revista ISI, Impact factor 2,233, SRI 1,305).
25. A.Halanay, C.A.Safta, I.Ursu, F.Ursu (2004), Stability of equilibria in a four-dimensional nonlinear model of a hydraulic servomechanism, *Journal of Engineering Mathematics*, vol. 49,no.4, p.391-406 (Olanda) ( revista ISI, Impact factor 1,076, SRI 0,955)
26. A.Halanay (2003), On the stability of some equilibrium points in a plankton population model,*Dynamical Systems.An International Journal*,18,no.3,p.227-231.(Marea Britanie) (revista ISI, Impact factor 0,597, SRI 0,657)
27. A.Halanay, C. A. Safta (2000), Existence and stability of normal motions in loaded hydraulic copying systems with periodic and composed inputs, *Z. Angew. Math. Mech.*, 80, no. 2, 93-101. (Germania) (revista ISI, Impact factor 1, 332, SRI 0,959)
28. A.Halanay, C. A .Safta (1999), Stability and accuracy of steady-state motions in loaded copying systems:an analytical approach, *Computer Assisted Mech.and Engineering Sci.*, 6, p.107-113. (Polonia)
29. A. Halanay, C. A. Safta (1998), Periodic motions for loaded two control edges hydraulic copying systems, *Computer Methods in Applied Mechanics and Engineering*, 158, p. 367-374. (SUA) (revista ISI, Impact factor 3,949, SRI 4,570)
30. A. Halanay (1991), A model for a general linear bounded operator between two Hilbert spaces, *Acta.Sci Math. (Szeged)*, 55, no.1-2, p.119-128.(Ungaria).

31. A. Halanay (1990), On the existence of invariant subspaces for some contractions with spectrum dominating an arc on the unit circle, J. Operator Theory, 23, p. 51-66. (Romania) (revista ISI, Impact factor 0, 524, SRI 1,046)

### Lucrări în reviste naționale

1. Irina Badralexi, Silvia Balea, Andrei Halanay, Dumitru Jardan, Rodica Radulescu, (2020), A complex model of cell evolution in leukemia including competition and the action of the immune system, Ann. Acad. Rom. Sci. Ser. Math. Appl. Vol. 12, No. 1-2/2020, p. 24-51.(BDI, ISSN 2066-5997).
2. Irina Badralexi, Andrei Halanay, Ragheb Mghames (2020), A delay differential equations model for maintenance therapy in Acute Lymphoblastic Leukemia,, Sci. Bull.UPB, Series A, Vol. 82, no. 3, p 13-24. (revista ISI, IF 0,629)
3. I. Badralexi, A.M. Bordei, A. Halanay (2018), Rank-one perturbations and stability of some equilibrium points in a complex model of cells evolution in leukemia, Sci. Bull. UPB, series A, vol.80, iss.3, pp.3-14 (revista ISI, IF 2019 0,629)
4. D. Enciu, A. Halanay, I. Ursu (2018), Delay differential equations models for mechano and electrohydraulic servomechanisms, Sci. Bull. UPB, series A, vol.80, iss.3, p 27-36.(revista ISI, IF 2019 0,629).
5. I. Badralexi, D. Căndea, A. Halanay, I.R. Radulescu (2018), A model for cell evolution in CML under treatment including pharmakodynamics, Bull. Math. Soc. Sci. Math. Roumanie, Tome 61 (109), No. 4, 383-398, FI 0,412, WOS 000454162900003
6. A. Halanay, C.M. Murea, D. Tiba (2018), Extension theorems related to a fluid-structure interaction problem, Bull. Math. Soc. Sci. Math. Roumanie, Tome 61 (109), No. 4, 2018, 417–437, FI 0,412, WOS: 000454162900006
7. A. M. Bordei, A. Halanay (2017) Stability analysis for an UAV model in a longitudinal flight, INCAS Bull, vol.9, no.4, pp.21-29.
8. I.R. Rădulescu , D. Căndea, A. Halanay (2016) , *Stability analysis of some equilibria in a time-delay model for competition of leukemia and healthy cells in CML*, Bull. Math. Soc. Sci. Math. Roumanie, Vol. 4 , ISSN: 1220-3874. ( revista ISI, IF 0,521)
9. I. Badralexi, A. Halanay, I. R. Radulescu (2015), A Lyapunov-Krasovskii Functional for a Complex System of Delay-Differential Equations, U.P.B. Sci. Bull., Series A, Vol. 77, Iss. 2, ISSN: 1223-7027.( revista ISI).
10. D. Căndea, A. Halanay, R. Radulescu (2013), Stability analysis in a model for stem-like hematopoietic cells dynamics in leukemia under treatment, Mathematics and its Applications, vol.5, no. 1-2, pp. 148-176.
11. A. Halanay, C. Murea si D. Tiba (2013), Existence and approximation for a steady fluid-structure interaction using fictitious domain approach with penalization, Mathematics and its Applications, vol.5, no. 1-2, pp. 120-147.
12. S. Balea, A. Halanay, I. Ursu (2010), Coordinate transformations and stabilization of some switched control systems with application to hydrostatic electrohydraulic

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- servoactuator, Control Engin. Appl. Informatics, vol 12, no. 3, pp 67-72.( revista ISI, IF 0, 537).
13. A. Halanay, A. Ionita (2010), Existence and stability of periodic motions in some roll-coupling dynamics of an aircraft, Proc. Romanian Academy, Ser. A, vol 11. no.2, pp. 103-107 (Lucrare ISI, IF 1, 658).
  14. A. Halanay (2010), Stability analysis for a mathematical model of chemotherapy action in hematological diseases, Bull. Math. Soc. Sci. Math. Roumanie, 53 (101), no. 1, pp. 3-10 (Lucrare ISI, IF 0,521).
  15. A. Halanay (2010), Treatment induced periodic solutions in some mathematical models of tumoral cell dynamics, Mathematical Reports, 12(62), no. 4, pp.329-339 (Lucrare ISI, IF 0,12)
  16. S. Balea, A. Halanay, I. Ursu (2009), Stabilization through coordinates transformation for switched systems associated to electrohydraulic servomechanisms, Mathematical Reports, 11(61), no. 4, p. 279-292 (Lucrare ISI, 0,12).
  17. I.Ursu, F. Ursu, A.Halanay, C.A.Safta (2008), Equilibrium Stability of a Servo Actuating Flight Controls in a Servoelastic Framework, Acta. Univ. Apulensis, 15, pp. 179-189.
  18. A. Halanay, I. Ursu (2007), Stability of equilibria in a model for electrohydraulic servomechanisms , Mathematical Reports, vol 9(59), nr.1, pp. 47-54.
  19. A. Halanay (2007), Some remarks on the stability of the “dead-ocean”steady-state in a plankton population model, Bull. Math. Soc. Sci. Math.Roumanie, Tome 50(98), no.2 (Lucrare ISI, IF 0, 521).
  20. A. Halanay (2004), Controlled factorization for some commuting pairs of contractions with thin spectrum, Revue Roum. de Math. Pures et Appl. 49, no. 4, 323-354.
  21. A. Halanay (2001), Weak\*-embedding  $l^1$  into  $H^\infty(D)$ :an example, Bull.Math.Soc.Sci.Math.Roumanie 44(92), no.2, p.199-207.
  22. A. Halanay (1999), Factorisation for contractions with essential resolvent rapidly growing near an arc on the unit circle,Math.Reports 1,no.1,p.49-81.
  23. A. Halanay, C.A.Safta(1999),Behaviour of unloaded copying systems near the stability boundary, Sci. Bull.UPB Ser.A, 61, no.1-2, p.65-81.
  24. A. Halanay (1998), On perturbation of boundedly complete basic sequences in Banach spaces, Sci. Bull. UPB Ser.A, 60, no. 3-4,p.129-135.
  25. A. Halanay, C. A. Safta, N.Vasiliu (1998), Periodic motions in hydraulic copying systems, Bull. řt. Univ. Pitești, Ser. Mat.-Fiz.2, p. 115-122.
  26. A. Halanay (1997), Sequences of non-weakly compact sets in  $A(D)^*$  and Schauder decompositions of  $l^1$ , Stud.Cerc.Mat.49,no.5-6,p.331-338.
  27. A. Halanay (1996), Subspaces of  $H^\infty$  and the study of contractions with spectral radius one, Revue Roumaine de Math. Pures et Appl. 41,no.1-2, p.51-82.
  28. A.Halanay (1989), A J-isometric dilation of a continuous semigroup with positive generator, Revue Roumaine de Math.Pures et Appl.34,no.1,p.23-27.

## **Lucrări in volume ale unor conferințe internationale**

1. A.-M. Bordei, A. Halanay (2018), *Stability of limit cycles in a longitudinal flight of an UAV*, AIP Conference Proceedings **2046**, 020011 (2018); (**ISI Proceedings**)
2. I. Badralexi, A. Halanay (2017), Stability and oscillations in a CML model, Mathematical Problems in Engineering, Aerospace and Science, ICNPAA 2016, AIP Conference Proceedings, **1798**, 020011 (2017); doi: 10.1063/1.4972603 (**ISI Proceedings**).
3. A. Halanay, C. A. Safta , C. Dragoi , V. Piraianu (2017), Stability analysis for a delay differential equations model of a hydraulic turbine speed governor model, Mathematical Problems in Engineering, Aerospace and Science, ICNPAA 2016, AIP Conference Proceedings, **1798**, 020134 (2017), doi: 10.1063/1.4972726 (**ISI Proceedings**)
4. D. Candea, A. Halanay, R. Radulescu, R. Talmaci (2017), Parameter estimation and sensitivity analysis for a mathematical model with time delays of leukemia, Mathematical Problems in Engineering, Aerospace and Science, ICNPAA 2016 AIP Conference Proceedings, **1798**, 020034 (2017); doi: 10.1063/1.4972626, (**ISI Proceedings**)
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ISBN 978-0-7354-1105-0 (ISI- Proceedings).

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