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Researcher ID : D-6105-2011

INTRODUCTION:

I was born in Antakya on 4th of August, 1951. I finished Antakya Lycee and entered Chemical Engineering Department of Istanbul University in 1968. Having won a Turkish Ministry of Education scholarship to study abroad, I went to Britain in 1969 and earned my B.Sc, M.Sc., and Ph.D degrees there before returning home in 1980. I worked as a researcher at Ankara Nuclear Research and Training Center for about six years. Subsequently, I moved to Chemical Engineering Department of Ankara University to start an academic career as an assistant professor. I received my associate professorship in 1991 and full professorship in 2009. I have completed 4 projects including an FP6 coordination action and supervised four M.Sc. theses. Most of my publications are single-authored. So far, **49** publications have given me **54 citations**.

CONTENTS:

Note that **K**, **C**, and **R** respectively label own work, citation, and reference.

BURSARIES, SUPPORTS and PRIZES:

PERIOD	DESCRIPTION
1964-1968	State boarding school bursary
1968	Basic sciences bursary from Scientific and Technological Council of Turkey
1969-1980	Turkish Ministry of Education scholarship to study abroad
1974	Anglo-Turkish Society Essay Prize
1974	British Council Overseas Students Fees Award
1985	ICTP support for the Third College on Microprocessors
1985	ICTP support for the 2nd Workshop on Mathematics in Industry
2017	Visiting scholar support, University of Illinois at Urbana-Champaign (UIUC)

HIGHER EDUCATION:

DEGREE	UNIVERSITY	DEPARTMENT	YEAR
B.Sc.	Birmingham (England)	Chemical Engineering	1975
M.Sc.	Salford (England)	Chemistry	1976
Ph.D.	Aston (England)	Chemical Engineering	1980

WORK:

PERIOD	DESCRIPTION
1974 Summer	Vacation training, Commonwealth Zinc Smelting Co., Avonmouth, Bristol
1977-1979	Demonstrator, Aston University
1980-1986	Researcher, Ankara Nuclear Research and Training Centre
1986-1991	Assistant professor, Chemical Engineering Department, Ankara University
1991-2009	Associate professor, Chemical Engineering Department, Ankara University
2009-	Full professor, Chemical Engineering Department, Ankara University
2004-2007	Associated professor representative on Faculty Board of Engineering Faculty
2016-2017	Visiting scholar at Beckman Institute, UIUC, USA

MEMBERSHIP:

Associated Member of IChemE (1977-2014)

MAIN ACHIEVEMENTS:

- My doctoral work culminated in a CSSL-type, Fortran-based, simultaneous modular dynamic simulation package called **ACES**. The latter achieved simultaneity via its novel **twice-round** execution of dynamic modules whenever the initially selected integration driver needed fresh derivatives. In the *first round*, each module retrieved its own state-variables from an up-to-date composite vector and attended to some local algebraic equations. In the *second round*, each module did further local calculations if necessary before estimating and forwarding derivatives for co-integration by the driver.
  My pertinent works are labelled *K3, K4, K8, K13, K14, K15, K32*, and *K34.*
- An interesting opening was a standard factorial experimental design application to optimize oxidative thermal decomposition of low density polyethylene (LDPE) in a semi-batch system. Preliminary experiments indicated that the reaction temperature (T), the reaction time (t), and the air feed rate (V_a) were the *three most important* factors (inputs) affecting the three outputs of interest, namely the acid number (z_A), the liquid yield (z_L), and the peroxide number (z_P). It was decided to employ the form $z = k_1 + k_2x_1 + k_3x_2 + k_4x_3 + k_5x_1x_2 + k_6x_1x_3 + k_7x_2x_3$ to link each output to the inputs x. Notice that this response surface had 7 coefficients k to be determined by the principle of least squares. Allowing two levels (low and high) for each variable, the standard factorial experimental design required $2^3 = 8$ runs which changed all inputs simultaneously rather than one at a time, thereby reducing the number of experiments needed. A ninth run was added with medium level (nominal) inputs to obtain a measure of the error involved. Let F be a 9×7 design matrix where each row is associated with a run and the columns are ones, x_1, x_2, x_3, x_1x_2, x_1x_3, and x_2x_3 respectively. Further, let F^+ denote the (Moore-Penrose generalized) pseudoinverse of F, i.e. $F^+ = (F^TF)^{-1}F^T$. The so-called normal equations are $F^TF\,K = F^TZ$ where $K = [k_A, k_L, k_P]$ and $Z = [z_A, z_L, z_P]$. The formal least squares solution is $K = F^+Z$. (In Matlab, simply write $K = F \backslash Z$.) Now, it is known that because variables in models are often highly correlated, when experimental data are collected, the F^TF matrix can be badly conditioned, and thus the estimates of the values of the coefficients in a model can have considerable associated uncertainty. The method of factorial design avoids this problem by using *scaled* (*or coded*) variables X where +1 and -1 values correspond to high and low values of x. This forces the data to be orthogonal, decouples the normal equations, and makes F^TF diagonal. The required transformation is $X_i = (x_i - x_{0i})/\Delta_i$, x_{0i} and Δ_i denoting the nominal and perturbation values of the ith input. In the application, the experiments were carried out in random order. Having established K, the process was optimized for z_A which was associated with carboxylic (particularly fatty) acid production.
  Details are referred to *K26*.
- Iterative solution of a scalar nonlinear equation $f(x) = 0$ proceeds by making a correction h at each step to x such that the estimated $f(x+h) \cong 0$. Any iterative solver $g(x) = x + h$ is in fact piecewise linearization approximating f by a series of straight lines with slope $m(x)$ going through the current iterate (x,f) and ($x+h$,0). So, $h = -f(x)/m(x)$. (Recall that Newton's method uses the current tangent to approximate f, that is $m(x) = f'(x)$.) I created a class of third-order iterative solvers in the form $g(x) = x + f(x)u(x)$ where $m(x) = -1/u(x)$. At a solution z, $f(z) = 0$, $g(z) = z$, $g'(z) = g''(z) = 0$. See my works labelled *K28* and *K30*. McNamee & Pan (see C35) briefly described this class in their book.
- There were three phases in the development of **Koçak's method** g_K to accelerate the convergence of an iterator g(x)=x attempting to solve a scalar nonlinear equation $f(x) = 0$. Omitting argument x for brevity:

  $$g_K = (g - m\,x)/(1-m), \quad m = wg' + (1-w)g'(z) = g'(z) + w(g' - g'(z))$$

  It amounted to (piecewise) linearization of g where m denotes the slope of a line passing through the iterate (x, g) and (g_K, g_K). The *first* version employed $w = 1/2$ (see *K29* and *K31*). The *second* version (see *K35* and *K39*) keyed this weight to the convergence order n of g as follows:

  If $n = 1$, then $w = 1/2$ with the result that g_K is of third order;

  If $n = 2$, then $w = 1/2$ again with the result that g_K is of third order;

  If $n > 2$, then $w = 1/n$ with the result that g_K is of (n+1)th order.

  The *third* version (see *K41*) performed well adjusting w at x so as to force w at z to the above-given limits.
- I published applications iteratively solving equilibrium problems (*K28*) and accelerating their solution (*K29*).
- I applied Ostrowski's fourth-order method to flash calculations (K33) and solution of cubic equations of state (K37).
- I devised a way for "*Simple, Robust, and Fast Iterative Solution of Underwood's Equation for Minimum Reflux*" (K36).
- I co-authored an invited book chapter in 2006, titled "*Waste Plastic Pyrolysis in Free-Fall Reactors*". See *K27.*
- I gave an invited lecture at Coimbra University, Portugal, in 2008, titled "*Convergence Acceleration*".
- I devised an amazing iterator, called **Koçak's double linearization loop**, for the solution of a scalar nonlinear equation (see *K40*). It was a powerful and robust contribution in this field. Tests including a case of a multiple root showed that it

worked superbly where other solvers failed. Hopefully, it will prove to be a good, pioneering numerical analysis tool. Briefly, $g(x) = x + h - f(x+h)/m(x+h), \quad h = -f(x)/m(x)$.

- My latest noteworthy product was **Koçak's 2-wing workbench for nonlinear least squares**. One wing called Matlab solvers directly, the other via *varpro* - a short reference to *variable projection*. Five solvers could operate in either wing: *fminunc*, *fmincon*, *nlinfit*, *lsqcurvefit*, and *lsqnonlin*. Function *fminsearch* could be called directly only. Together, these solvers offered the user over ten algorithms. The versatile and robust workbench docked applications as a nested Matlab function housing two user blocks. Let T and x respectively denote the nonlinear and linear *parameters* (or *predictors*) to tune and t be the independent variable of a function $y(T,x,t)$. Let W be a diagonal matrix of point weights w. Further, let T, x, t, y, y_{dat}, and z be column vectors where each row corresponds to a data point. Consider a *separable nonlinear least squares* (shortly, SNNLS) problem

$$[T,x] = \arg\min_{T,x} \|z_W\|_2^2, \quad z_W = Wz, \quad z = y_{dat} - y(T,x,t), \quad y(T,x,t) = F(T,t)\,x \approx y_{dat}$$

  Observe that each column in the design matrix F is associated with a basis function $f(T,t)$. Varpro solution involves two loops one inside the other. The outer one operates on T whereas the inner one tends to the linear least squares problem which can be stated as

$$\text{Given T:}\ x = \arg\min_{x} \|z_W\|_2^2, \quad z_W = W(y_{dat} - Fx) = P\,y_{dat}.$$

  P is called a projection matrix or projection functional. Varpro harnesses the singular value decomposition (SVD) of F_W:

$$F_W = WF = U_{N\times N} S_{N\times n1} V^T_{n1\times n1}$$

  where N is the number of experimental points and n_1 be the number of columns in F. Omitting subscripts N and n_1,

$$F_W^+ = VS^+U^T, \ x = F_W^+ W y_{dat}, \ z_W = W(y_{dat} - Fx).$$

  As can be seen, P need not be calculated explicitly. Note that $P = P^T = (I - UU^T)W$:

$$z_W = W(y_{dat} - Fx) = W y_{dat} - \underbrace{WF}_{F_W} \underbrace{F_W^+ W y_{dat}}_{x} = W y_{dat} - UU^T W y_{dat} = \underbrace{(I - UU^T)W}_{P} y_{dat} = P\,y_{dat}.$$

  See *K43*.

- During my sabbatical visit to University of Illinois at Urbana-Champaign, USA, I successfully applied **Koçak's workbench for nonlinear least squares** to an interesting but difficult problem, namely, characterization of viscoelastic materials by spherical nanoindentation. It was a separable nonlinear least squares case:

$$y = h^{3/2} = K \begin{cases} x_0\, t - \sum_{i=1}^{n} x_i T_i (1 - e^{-t/T_i}) & 0 \le t \le t_r \\ x_0\, t_r + \sum_{i=1}^{n} x_i T_i e^{-t/T_i} (1 - e^{t_r/T_i}) & t_r \le t \end{cases}$$

  T and x respectively had n and n+1 elements where n itself was unknown. Physically, h was the indentation measured as the ramp-hold response of a standard linear solid (SLS) model which comprised *one spring* and n Kelvin-Voigt units in series. Each Kelvin-Voigt unit had a spring and a dashpot connected in parallel. Each spring (dashpot) represented an elastic (viscous) component.

- As listed later, **49** publications have given me **54** **citations** so far.

MAIN RESEARCH INTERESTS:

- Process modelling, simulation, control, design, and optimisation
- Experimental design
- Numerical methods
- Computer programming in various environments including Fortran, Matlab, and Simulink

NEAR FUTURE INTERESTS:

I intend to develop a Matlab-based, twice-round, simultaneous modular simulation package. Furthermore, I would like to enter:

- Advanced control
- Fractional derivatives
- Moment techniques
- Image processing
- Microfluidics (Lab-on-a-chip, LOC)

COMPLETED PROJECTS:

PERIOD	DESCRIPTION
1982-1983	State Ministry and Scientific and Technological Research Council of Turkey *1983 Research and Development Inventory of Turkey*

1989-1990 Ankara University Research Fund, No. 89-25-00-20
Koçak M Ç, Özkazanç O
Response of a Packed Column to a Step Change in Reboiler Heat Load

1991-1992 Ankara University Research Fund, No. 91-25-00-16
Koçak M Ç, Karagöz A R
Online Computer Control of a Batch Polymerisation Reactor

2009-2010 Representation of Ankara University in a Coordination Action Project in FP6
INNOVA-MED, Innovative processes and practices for wastewater treatment and re-use in the Mediterrenean region (INCO-CT-2006-517728)

SUPERVISED THESES:

1. Karagöz A R 1991
   Online Computer Control of a Batch Polymerisation Reactor, M.Sc. thesis, Ankara University
2. Ünal İ 1995
   Application of Dynamic Matrix Control to a Polymerisation Reactor, M.Sc. thesis, Ankara University
3. Kocaoğlu M A 2010
   Minimisation of Transportation Cost of a Fuel Distribution System via Linear Programming, M.Sc. thesis, Ankara University
4. Erşan A 2010
   Temperature Control of a Batch Polymerisation Reactor, M.Sc. thesis, Ankara University

UNDERGRADUATE COURSES:

- Computer Programming
- Stoichiometry
- Numerical Methods
- Thermodynamics
- Chemical Engineering Mathematics
- Chemical Engineering Economy
- Introduction to Dynamic Simulation
- Process Control
- Optimisation
- Research Techniques

GRADUATE COURSES:

- Applied Numerical Methods
- Multicomponent Distillation
- Process Control

INVITED LECTURE:

Koçak M Ç 2008
Convergence Acceleration. Chemical Engineering Department, Coimbra University, Portugal.

OWN PUBLICATIONS

THESES:

LABEL	DESCRIPTION
K1	**Koçak M Ç** 1975 *The role of nuclear power in the present energy crisis with particular reference to the light water reactors* Technical report, Chem. Eng. Dept., Birmingham University, England.
K2	**Koçak M Ç** 1976 *A radiochemical study of manganese self-diffusion in synthetic faujasites* M.Sc. dissertation, Salford University, England (Supervisor: Dr. Alan Dyer) 48 references > R1-R48
K3	**Koçak M Ç** 1980 *Dynamic simulation of chemical plant* Ph.D. thesis, Aston University, England (Supervisor: Dr. Brian Gay) 65 references > R49-R113 **7+3=10 citations** < K4,K8,K13,K14,K32,K34,K40, **C1,C2,C3**

Recall that K, C, and R respectively label own work, citation, and reference.

JOURNAL ARTICLES. CONFERENCE PRESENTATIONS and BOOKS:

LABEL	DESCRIPTION
K4	Fletcher J P, Gay B, **Kocate C M*** 1982 (* misprinted) *A dynamic simulation package for chemical engineering* 9th Annual Research Meeting of IchemE, Imperial College, London, England Trans IChemE, 60(4) 253-254 ISSN:0263-8762

+1=1 citation < C4

K5 Tarımcı Ç, **Koçak M Ç** 1983 (in Turkish)
Data generation at national level: 1983 Turkey R+D Inventory
The Scientific and Technological Research Council of Turkey, TÜRDOK National Information System I. National Symposium, Ankara, Turkey

K6 **Koçak M Ç** 1986 (in Turkish)
RT-11 and Class language user manual
Turkish Atomic Energy Authority, ANAEM, Ankara, Turkey

K7 Tarımcı Ç, **Koçak M Ç**, Mutlu 1986 (Translated from English)
Measurement of scientific and technical activities – Frascati manual 1980
Değişim Yayınları, Verso, Ankara, Turkey

K8 **Koçak M Ç,** Gay B, Fletcher J P 1988 (in Turkish)
A modular dynamic simulation package: ACES
Chemistry 88, V. Chemistry and Chemical Engineering Symposium, Ankara, Turkey
Extended summaries , Pişkin E (Ed), 26-27
3 references > K3, R65,R73

K9 **Koçak M Ç** 1988 (in Turkish)
Modular approach in distillation column design
Chemistry 88, V. Chemistry and Chemical Engineering Symposium, Ankara, Turkey
Extended summaries, Pişkin E (Ed), 28-29
1 reference > R114

K10 **Koçak M Ç** 1988 (in Turkish)
Newton's method in calculating minimum reflux ratio in distillation
Chemistry 88, V. Chemistry and Chemical Engineering Symposium, Ankara, Turkey
Extended summaries, Pişkin E (Ed), 30-31
1 reference > R115

K11 Gülşen S, Mehmetoğlu Ü, **Koçak M Ç,** 1988 (in Turkish)
Investigation of dynamics of a packed column producing ethyl alcohol via immobilised Z. Mobilis
Chemistry 88, V. Chemistry and Chemical Engineering Symposium, Ankara, Turkey
Extended summaries, Pişkin E (Ed), 157-159
2 references > R118,R119

K12 **Koçak M Ç** 1989 (in Turkish)
Industrial database applications
Industrial Control Systems – Electronic Measurement, Logging, and Control Symposium II, Ankara, Turkey

K13 **Koçak M Ç** 1990
Modular approach to dynamic simulation in chemical engineering applications: when and how?
Second National Computer Simulation Symposium, Ankara, Turkey
22 references > K3, R51,R54,R57,R65,
R66,R68,R69,R73,R78,R79,R82,R87,R88,R91,R95,R96,R103,R105,R108, R109, R112
1=1 citation < K14

K14 **Koçak M Ç** 1990
Dynamic simulation of distillation columns with a modular approach
Second National Computer Simulation Symposium, Ankara, Turkey
21 references > K3, K13,R51,R54,R65,
R66,R68,R69,R73,R78,R79,R82,R87,R88,R91,R95,R96,R103,R105,R109, R112

K15 **Koçak M Ç** 1992
Letter to the editors
Comput. Chem. Engng, 16(9) 817 ISSN: 0098-1354

"It is noteworthy that the notion of twice-round execution was conceived and implemented in my doctoral work prior to that of Fagley. I shall be grateful if you kindly make this fact public."

3 references > K3,R65, R116
2=2 citations < K34,K40

K16 Mehmetoğlu Ü, Çiçek S, **Koçak Ç** 1993
Dynamics of a column reactor fermenting glucose via Immobilised Z. Mobilis to produce ethyl alcohol
Chem and Biochem Eng Quarterly, 7 (2) 97-100 ISSN:0352-9568
10 references > R117-R126
+1=1 citation < C5

K17 **Koçak M Ç,** Ünal İ, Abilov A 1996 (in Turkish)
Modelling of a batch reactor in which free radicalic addition polymerisation of styrene occurs and simulation of its dynamic matrix control applications
UKMK-2 Second National Chemical Engineering Congress, Istanbul, Turkey
Proceedings, Vol. 1, 564-569, Türkay S, Tantekin-Ersolmaz Ş B, Yardım M F (eds)
11 references > R127-R137

K18 Abilov A, **Koçak M Ç** 1997

A multi-source database and an experimental design method for determining the best operating conditions for a batch polymerisation process and optimisation application
XI. National Chemistry Congress, Van, Turkey
Abstracts, p.327

K19 Abilov A, **Koçak M Ç** 1998
Optimal control of alkyne hydrogenation with a nonlinear model
XII. National Chemistry Congress, Edirne, Turkey
Abstracts, p.649, Kaçan M (ed)
3 references > R138-R140

K20 Abilov A., **Koçak M Ç** 1998
Real-time optimization and control of industrial alkyne hydrogenation
DYCOPS-5, 5th IFAC Symposium on Dynamics and Control of Process Systems, 8-10 June, 1998, Corfu, Greece. Preprints (Ed. C. Georgakis), pp.508-510
7 references > R140-R146
1=1 citation < K22

K21 Doğan A Ü, **Koçak M Ç** 1998
EDS x-ray microanalysis program (in Fortran) for off-line materials characterization
Third Int Turkish Geology Symposium, Middle East Technical University, 31 August-4 September, 1998, Ankara, Turkey, p. 41

K22 Abilov A G, **Koçak M Ç** 2000
An optimal control application to an industrial hydrogenation reactor
Chemical engineering research and design, 78(A4)630-632 ISSN:0263-8762
http://www.sciencedirect.com/science/article/pii/S0263876200719320
8 references > K20,R138,R143,R145,R147-R150
+5=5 citations < C13, C22,C42,C46,C47

K23 Karaduman A, Şimşek E H, **Koçak M Ç**, Bilgesü A Y 2002
Use of cyclohexane as solvent in thermal degradation of low density polyethylene wastes
Polymer-Plastics Technology and Engineering, 41(4)767-776 ISSN:0360-2559
15 references > R151-R165
+5=5 citations < C6,C15,C17,C32,C34

K24 Alibeyli R, Yeniova H, **Koçak M Ç**, Karaduman A 2003
Kinetic peculiarities of benzene production from benzene-toluene-xylene fraction of pyrolysis gasoline by catalytic hydrodealkylation at high temperature
Petroleum Science and Technology, 21(5,6)789-803 ISSN:1091-6466
24 references > R166-R189
+1=1 citation < C8

K25 Karaduman A, **Koçak M Ç**, Bilgesü A Y 2003
Flash vacuum pyrolysis of low density polyethylene in a free-fall reactor
Polymer-Plastics Technology and Engineering, 42(2)181-191 ISSN:0360-2559
24 references > R152,R153,R155-R158,R160,R161,R164,R190-R204
1+8=9 citations < K27, **C6,C7,C9,C10,C12,C37,C44,C48**

K26 Koç A., Bilgesü A Y, Alibeyli R, **Koçak M Ç** 2004
A Factorial Experimental Design for Oxidative Thermal Decomposition of Low-density Polyethylene Waste
J Anal Appl Pyrolysis, 72(2)309-315 ISSN:0165-2370
http://www.sciencedirect.com/science/article/pii/S0165237004000816
18 references > R155,R158,R205-R220
+9=9 citations < C11,C14,C18,C19,C24,C31,C33,C43,C45

K27 Bilgesü A Y, **Koçak M Ç**, Karaduman A 2006 **(Invited book chapter)** ISBN: 978-0-470-02152-1
Chapter 23. Waste Plastic Pyrolysis in Free-Fall Reactors
Feedstock Recycling and Pyrolysis of Waste Plastics (Eds. J. Scheirs and W. Kaminsky), John Wiley & Sons Ltd.
62 references > K25,R151-R161,R190-R204,R221-R256
+4=4 citations < C25,C37,C39,C40

K28 **Koçak M Ç** 2006
A new iterative method created and applied to equilibrium calculations
Chisa 2006 17th International Congress of Chemical and Process Engineering, 27-31 August 2006, Prague, Czech Republic. Summaries 4, Systems Engineering, pp. 1229-1230
4 references > K30,R65,R67,R257
2=2 citations < K30,K35

K29 **Koçak M Ç** 2006
Acceleration of equilibrium calculations via a new technique
Chisa 2006 17th International Congress of Chemical and Process Engineering, 27-31 August 2006, Prague, Czech Republic. Summaries 6, Supplement, pp. 1891-1892
5 references > K30,K31,R65,R67,R257
3=3 citations < K30, K31, K35

K30 **Koçak M Ç** 2008

A class of iterative methods with third order convergence to solve nonlinear equations
The Proceedings of the Twelfth International Congress on Computational and Applied Mathematics (ICCAM2006), 10-14 July 2006, Leuven, Belgium. Eds.. Goovaerts M J, Vandewalle S, Van Daele M, Wuytack L
J. Comput.Appl.Math , 218(2)290-306. ISSN:0377-0427
http://www.sciencedirect.com/science/article/pii/S0377042707000738 DOI:10.1016/j.cam.2007.02.001
15 references > K28,K29,K31,R67,R257-R267
5+8=13 citations < K28, K29, K31, K35,K40, **C16,C20,C23,C26,C27,C28,C29,C35**

K31 **Koçak M Ç** 2008
Simple geometry facilitates iterative solution of a nonlinear equation via a special transformation to accelerate convergence to third order
The Proceedings of the Twelfth International Congress on Computational and Applied Mathematics (ICCAM2006), 10-14 July 2006, Leuven, Belgium. Eds.. Goovaerts M J, Vandewalle S, Van Daele M, Wuytack L
J. Comput.Appl.Math, 218(2)350-363 ISSN:0377-0427
http://www.sciencedirect.com/science/article/pii/S0377042707001318 DOI:10.1016/j.cam.2007.02.036
13 references > K29,K30,R65,R67,R257-R260,R263-R266,R268
9+4=13 citations < K29,K30,K35,K36,K37,K38,K39, K40,K41**, C21,C27,C28,C29**

K32 **Koçak M Ç** 2008
Simulation optimises feedback control on the temperature of a heterogeneous batch reactor
ChemPor 2008, 10th International Chemical and Biological Conference, 4-6 September 2008, Braga, Portugal. Book of abstracts (ed. E.C. Ferreira) pp.762-763
3 references > K3, R65, R269
1=1 citation < K34

K33 **Koçak M Ç** 2008
Ostrowski's fourth order method applied to flash calculations
ChemPor 2008, 10th International Chemical and Biological Conference, 4-6 September 2008, Braga, Portugal
3 references > K3,R65,R266

K34 **Koçak M Ç** 2009
Use of Simulink's non-linear S-function to Simulate Feedback Temperature Control of a Heterogeneous Batch Reactor
Chemical Product and Process Modeling 4 (4), art. No. 15 ISSN:1934-2659
DOI: 10.2202/1934-2659.1358
5 references > K3,K15,R269-R271
1=1 citation < K40

K35 **Koçak M Ç** 2009
Acceleration of iterative methods, in Reports of the Third Congress of the World Mathematical Society of Turkic Countries
Zhumagulov, B.T. (ed) Almaty, June 30–July 4, 2009, Kazakhstan, pp.103-11 ISBN: 978-601-240-063-2
9 references > K28,K29,K30,R65,R67,R257,R258,R266,R272
5=5 citations < K36, K38, K39, K40,K41

K36 **Koçak M Ç** 2011
Simple, Robust, and Fast Iterative Solution of Underwood's Equation for Minimum Reflux
Chemical engineering research and design, 89(2011) 197–205 ISSN:0263-8762
http://www.sciencedirect.com/science/article/pii/S0263876210001681 DOI:10.1016/j.cherd.2010.05.006
22 references > K31,K35,R65,R67,R114,R257,R258,R266,R272-285
1+4=5 citations < K40, **C30,C36,C38,C49**

K37 **Koçak M Ç** 2011
Ostrowski's fourth-order iterative method speedily solves cubic equations of state
J Comput.Appl.Math 235(16)pp. 4736-4741 ISSN:0377-0427
http://www.sciencedirect.com/science/article/pii/S0377042710005042
9 references > K31,R65,R67,R257,R258,R266,R277,R281,R286
1+1=2 citations < K40,**C41**

K38 **Koçak M Ç** 2011
Second Derivative of an Iterative Solver Boosts Its Acceleration by Koçak's Method
Applied Mathematics and Computation, 218 (3) pp. 893-898 ISSN:0096-3003
http://www.sciencedirect.com/science/article/pii/S0096300311006163 DOI:10.1016/j.amc.2011.04.046
8 references > K31,K35,R65,R67,R257,R258,R266,R281
2=2 citations < K39,K41

K39 **Koçak M Ç** 2013
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