Curriculum Vitae
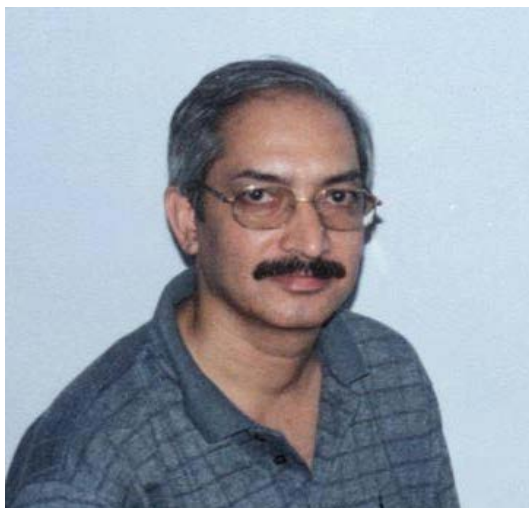
Of

DHIRENDRA BAHUGUNA

ADDRESS FOR CORRESPONDENCE

Dr. D. Bahuguna
Professor
Department of Mathematics
I.I.T. Kanpur - 208 016
INDIA.

E-mail: dhiren@iitk.ac.in

Phone: 0512-2597053 (Office)
        0512-2598604 (Residence)

PERSONAL DETAILS

Date of Birth	:	June 28, 1962.
Nationality	:	Indian.
Sex	:	Male.
Marital Status	:	Married.

PRESENT STATUS

Working as Professor in the Department of mathematics,
Indian Institute of Technology, Kanpur since December 2007.

EDUCATIONAL QUALIFICATIONS

Ph.D.   : In Mathematics from I.I.T. Kanpur in 1990 under the supervision of Prof. V. Raghavendra, Professor, Department of Mathematics, I.I.T. Kanpur.

M.Sc.   : In Applied mathematics from Roorkee University in 1984 with 77.66% of marks with honors.

B.Sc.   : In Physics, Chemistry and Mathematics from Garhwal University in 1981 with 70.1% of marks.

RESEARCH INTERESTS

Main areas of research interest are Differential Equations in Abstract Spaces (34Gxx), Functional Differential Equations (34Kxx), Parabolic Equations and Systems (35Kxx), Equations of mathematical physics and other areas of application (35Qxx), Approximation in normed linear spaces and other abstract spaces (41A65)

RESEARCH AND TEACHING EXPERIENCE

Working as Professor in the Department of mathematics, I.I.T. Kanpur since December 2007.

Worked as Associate Professor in the Department of mathematics, I.I.T. Kanpur from December 2002 to December 2007.

Worked as Assistant Professor in the Department of Mathematics, IIT Kanpur from September 1997 to December 2002.

Major Courses Taught:

MSO202/A (Complex Analysis) as
Instructor during first semester in
2014-15.

MTH653(Integral Equations) in the
second semester in 2013-14.

MTH-203 as Instructor Incharge during
I semester of 1998-99

MTH-203R as Instructor Incharge during
II semester of 1997-98.
Other Courses Taught:

MTH-408 (Mathematical Methods) during
II semester of 1998.
Worked as Assistant Professor in the
Department of mathematics, I.I.T.
Madras from November 29, 1995 to
September 10, 1997.

Worked as Lecturer in the Department
of Mathematics and Astronomy, Lucknow
University, Lucknow from May 27, 1991
to November 23, 1995.

Worked as Lecturer at North-Eastern
Regional Institute of Science and
Technology, Itanagar from October 30,
1989 to May 21, 1991.

Worked as Senior Research Fellow in
the Department of Mathematics, I.I.T.
Kanpur from July 28, 1986 to September
1989.

Worked as Junior Research Fellow in
the Department of Mathematics, I.I.T.
Kanpur from July 28, 1984 to July 28,
1986.

NBHM SPONSORED RESEARCH PROJECT

Completed a Three-year Research Project on "Functional Differential
Equations arising in the Study of Materials with Memory" sponsored by
the National Board for Higher Mathematics from
March 1998 to February 2001.

Worked on a Three-year Research Project on "Abstract Evolution Equations
and their Applications" sponsored by the
National Board for Higher Mathematics
starting from March 2002-February-2005.

NBHM SPONSORED WINTER SCHOOL

Worked as one of the Coordinators (with Prof. V. Raghavendra and Dr. B.V.
Ratish Kumar) for the Winter School on "Sobolev Spaces and its
Applications" from December 3 to December 19, 1998.

Delivered five lectures on "theory of Distributions and Applications" for
the above mentioned Winter School.

ORGANIZATION OF AN INTERNATIONAL CONFERENCE

Organized (with Prof. V. Raghavendra and Prof. A.K. Pani) the
International Conference on "Current Trends in Differential
Equations and Dynamical Systems" During December 15-17, 2001
at I.I.T. Kanpur sponsored by NBHM, AICTE, CSIR and DST.

ADMINITRATIVE EXPERIENCE

Working as Chairman, Council of Wardens,
I.I.T. Kanpur since February, 2003.

Worked as Vice Chairman, Council of Wardens,
I.I.T. Kanpur from February 2002 to
January 2003.

Worked as Warden and Warden-In-Charge, Hall -
II of I.I.T. Kanpur from January 1,
1998 to Jaunary 2001.

```
Worked as a Member of DUGC and DUDC Convenor
from July 1998 to September 2001.
```

LIST OF PUBLICATIONS

Books Editted

```
D. BAHUGUNA, V.RAGHAVENDRA AND B.V. RATHISH
KUMAR:
Topics in Sobolev Spaces and their
Applications,
Narosa, 2002.

D. BAHUGUNA: DIFFERENTIAL EQUATIONS AND
DYNAMICAL SYSTEMS,
Narosa, 2005.
```

List of Publications

MR3233519 Prelim Kumar, Pradeep; Pandey, D. N.; Bahuguna, D.; Approximations of solutions to a retarded type fractional differential equation with a deviated argument. *J. Integral Equations Appl.* 26 (2014), no. 2, 215-242.

MR3218899 Prelim Maqbul, Md.; Bahuguna, D.; Almost Periodic Solutions for Stepanov-Almost Periodic Differential Equations. *Differ. Equ. Dyn. Syst.* 22 (2014), no. 3, 251-264.

MR3151715 Indexed Kumar, Pradeep; Pandey, Dwijendra N.; Bahuguna, D. On a new class of abstract impulsive functional differential equations of fractional order. *J. Nonlinear Sci. Appl.* 7 (2014), no. 2, 102-114. 34K37 (26A33 34K45 35R11 45J05)

MR3135042 Reviewed Kamaljeet; Bahuguna, D. Controllability of the impulsive finite delay differential equations of fractional order with nonlocal conditions. *Neural Parallel Sci. Comput.* 21 (2013), no. 3-4, 517-532. (Reviewer: Krishnan Balachandran) 34K30 (26A33 34K37 34K45 93B05)

MR3009492 Indexed Mishra, Indira; Bahuguna, D. Weighted pseudo almost automorphic solution of an

integro-differential equation, with weighted Stepanov-like pseudo almost automorphic forcing term. *Appl. Math. Comput.* 219 (2013), no. 10, 5345-5355. 45J05

MR2972639 Reviewed Maqbul, Md.; Bahuguna, D. On the Stepanov-like almost automorphic solutions of abstract differential equations. *Differ. Equ. Dyn. Syst.* 20 (2012), no. 4, 377-394. (Reviewer: Bolis Basit) 34C27 (34G20)

MR2962108 Reviewed Haloi, Rajib; Pandey, Dwijendra N.; Bahuguna, D. Existence, uniqueness and asymptotic stability of solutions to non-autonomous semi-linear differential equations with deviated arguments. *Nonlinear Dyn. Syst. Theory* 12 (2012), no. 2, 179-191. 34K30 (34G20)

MR2897755 Reviewed Haloi, Rajib; Pandey, Dwijendra N.; Bahuguna, D. Existence and uniqueness of a solution for a non-autonomous semilinear integro-differential equation with deviated argument. *Differ. Equ. Dyn. Syst.* 20 (2012), no. 1, 1-16. (Reviewer: Ludwik Byszewski) 34G20 (34K30 35K90 35R20 45J05)

MR2817174 Reviewed Mishra, I.; Bahuguna, D.; Abbas, S. Existence of almost automorphic solutions of neutral functional differential equation. *Nonlinear Dyn. Syst. Theory* 11 (2011), no. 2, 165-172. (Reviewer: Khalil Ezzinbi) 34K14 (34K40 37L05)

MR2798816 Reviewed Dabas, J.; Bahuguna, D. Existence and uniqueness of solutions of strongly damped wave equations with integral boundary conditions. *Nonlinear Dyn. Syst. Theory* 11 (2011), no. 1, 65-82. (Reviewer: Massimo Cicognani) 35L35 (35A01 35A02 35Q74 47N20)

MR2663685 Indexed Bahuguna, D.; Shukla, R. K.; Kumar, Rakesh; Kumar, Kamalendra Well-posedness of a class of parabolic integro-differential equations. *J. Int. Acad. Phys. Sci.* 14 (2010), no. 4, 481-485. 35K20 (35B30 35R09)

MR2560802 Reviewed Bahuguna, D.; Shukla, R. K.; Saxena, S. Functional differential equations with nonlocal conditions in Banach spaces. *Nonlinear Dyn. Syst. Theory*

10 (2010), no. 4, 317-323. (Reviewer: Andrei Horvat-Marc) 34G20 (34B10 34K30 47D06 47N20)

MR2739482 Reviewed Ali, Javid; Imdad, M.; Bahuguna, D. Common fixed point theorems in Menger spaces with common property (E.A). *Comput. Math. Appl.* 60 (2010), no. 12, 3152-3159. 47H10 (47S50)

MR2724499 Reviewed Pandey, Dwijendra N.; Ujlayan, Amit; Bahuguna, D. On nonlinear abstract neutral differential equations with deviated argument. *Nonlinear Dyn. Syst. Theory* 10 (2010), no. 3, 283-294. (Reviewer: Rodrigo L. Pouso) 34K30 (34G20)

MR2653610 Reviewed Bahuguna, D.; Abbas, S.; Shukla, R. K. Laplace transform method for one-dimensional heat and wave equations with nonlocal conditions. *Int. J. Appl. Math. Stat.* 16 (2010), No.
 M10,
 96-100. 65M99 (35L20 45K05 65R10)
MR2643194 Reviewed Pandey, D. N.; Ujlayan, A.; Bahuguna, D. Semilinear hyperbolic integrodifferential equations with nonlocal conditions. *Nonlinear Dyn. Syst. Theory* 10 (2010), no. 1, 77-92. (Reviewer: Jana Kopfova) 45J05 (34B10 34G20 34K30 47N20)
MR2562408 Indexed Bahuguna, D.; Ujlayan, A.; Pandey, Dwijendra N. Method of Kronecker product to advanced type Riccati differential systems with strongly coupled quadratic terms. *Comput. Math. Appl.* 58 (2009), no. 8, 1615-1622. 34K07
MR2535909 Reviewed Abbas, S.; Bahuguna, D.; Banerjee, M. Effect of stochastic perturbation on a two species competitive model. *Nonlinear Anal. Hybrid Syst.* 3 (2009), no. 3, 195-206. 92D25 (34K50 60G35 93E15)
MR2536279 Reviewed Pandey, Dwijendra N.; Ujlayan, Amit; Bahuguna, D. On a solution to fractional order integrodifferential equations with analytic semigroups. *Nonlinear Anal.* 71 (2009), no. 9, 3690-3698. 34G20 (26A33 34C10 34K05 45A05 47D06)
MR2509961 Reviewed Bahuguna, D.; Ujlayan, A.; Pandey, D. N. A comparative study of numerical methods for solving an integro-differential equation. *Comput. Math. Appl.* 57 (2009), no. 9, 1485-1493. 65R20 (65T60)
MR2491276 Indexed Bahuguna, D.; Ujlayan, Amit; Pandey, Dwijendra N. ADM series solution to a nonlocal

one-dimensional heat equation. *Int. Math. Forum* 4 (2009), no. 9-12, 581-585. 35K05 (35C10 35K20 65M99)

MR2499731 Reviewed Bahuguna, D.; Pandey, D. N.; Ujlayan, A. Non-autonomous nonlinear integro-differential equations with infinite delay. *Nonlinear Anal.* 70 (2009), no. 7, 2642-2653. (Reviewer: Natali Hritonenko) 34K06 (45J05)

MR2534443 Indexed Abbas, S.; Bahuguna, D. Almost periodic solutions of nonlinear functional differential equations. *Differ. Equ. Dyn. Syst.* 16 (2008), no. 3, 289-308. 34K14

MR2533966 Reviewed Abbas, S.; Bahuguna, D. Almost periodic solutions of a functional differential equation by monotone iterative method. *Differ. Equ. Dyn. Syst.* 16 (2008), no. 1-2, 47-62. (Reviewer: Gani T. Stamov) 34K14 (47N20)

MR2482448 Reviewed Bahuguna, D.; Dabas, J.; Shukla, R. K. Method of lines to hyperbolic integro-differential equations in R_n. *Nonlinear Dyn. Syst. Theory* 8 (2008), no. 4, 317-328. 35L15 (35L90 47D06)

MR2463299 Reviewed Bahuguna, D.; Dabas, J. Existence and uniqueness of a solution to a semilinear partial delay differential equation with an integral condition. *Nonlinear Dyn. Syst. Theory* 8 (2008), no. 1, 7-19. (Reviewer: Jana Kopfova) 35K55 (34K30 35R10 47N20)

MR2458659 Reviewed Bahuguna, D.; Muslim, M. Approximation of solutions to a class of second order history-valued delay differential equations. *Nonlinear Dyn. Syst. Theory* 8 (2008), no. 3, 237-254. (Reviewer: Diana Otrocol) 34K30 (34K07 35R10 47D06 47N20)

MR2446358 Reviewed Bahuguna, D.; Abbas, S.; Dabas, J. Partial functional differential equation with an integral condition and applications to population dynamics. *Nonlinear Anal.* 69 (2008), no. 8, 2623-2635. 35K20 (65M20 92D25)

MR2443208 Reviewed Muslim, M.; Bahuguna, D. Existence of solutions to neutral differential equations with deviated argument. *Electron. J. Qual. Theory Differ. Equ.* 2008, No. 27, 12 pp. (Reviewer: Eva Sánchez) 34G20 (34K30 34K40 47D06 47N20)

MR2416028 Reviewed Abbas, S.; Bahuguna, D. Almost periodic solutions of neutral functional differential equations. *Comput. Math. Appl.* 55 (2008), no. 11, 2593-2601. (Reviewer: V. G. Kurbatov) 34K14 (34K40 47N20)

MR2379387 Reviewed Bahuguna, D.; Pandey, D. N.; Ujlayan, A. Nonlocal semi-linear hyperbolic integro-differential equations in a Banach space. *Int. J. Appl. Math. Stat.* 13 (2008), No. S08, 21-30. 34G20 (34K30 45K05 45N05 47G20 47N20)

MR2369418 Reviewed Bahuguna, D.; Dabas, J. Existence and uniqueness of a solution to a partial integro-differential equation by the method of lines. *Electron. J. Qual. Theory Differ. Equ.* 2008, No. 4, 12 pp. (Reviewer: Teresa Winiarska) 34K30 (34G20 45K05 47H06 47H20)

MR2385827 Reviewed Bahuguna, D.; Ujlayan, A.; Pandey, D. N. Advanced type coupled matrix Riccati differential equation systems with Kronecker product. *Appl. Math. Comput.* 194 (2007), no. 1, 46-53. (Reviewer: Bernard J. Harris) 34A05 (34K07)

MR2351436 Reviewed Bahuguna, D.; Abbas, S. Pseudo almost periodic mild solutions of retarded functional differential equations. *Glob. J. Pure Appl. Math.* 3 (2007), no. 1, 27-36. (Reviewer: Bhagat Singh) 34K14 (34K30)

MR2323044 Reviewed Bahuguna, D.; Pandey, D. N.; Ujlayan, A. Second-order integrodifferential equation with nonautonomous operators. *Differential Integral Equations* 20 (2007), no. 6, 681-692. (Reviewer: Valentin Keyantuo) 45N05 (34A12 34K30 35L15 35L90 47G20 47N20)

MR2222779 Reviewed Bahuguna, D.; Muslim, M. A study of nonlocal history-valued retarded differential equations using analytic semigroups. *Nonlinear Dyn. Syst. Theory* 6 (2006), no. 1, 63-75. (Reviewer: Hiroki Tanabe) 34G20 (34K30 47D06 47N20)

MR2204173 Indexed Bahuguna, D.; Muslim, M. Approximation of solutions to non-local history-valued retarded differential equations. *Appl. Math. Comput.* 174 (2006), no. 1, 165-179. 34K30 (34G20 65L05)

MR2273683 Reviewed Bahuguna, D.; Shukla, R.; Singh, S. Application of method of semidiscretization in time to semilinear viscoelastic systems. *Differential Equations Dynam. Systems* 13 (2005), no. 3-4, 323-341. 47N20 (34G10 65M20 74D10 74H15)

MR2189831 Reviewed Bahuguna, D.; Shukla, R. K. Application of Rothe's method to delay differential equations. *Bull. Calcutta Math. Soc.* 97 (2005), no. 6, 511-516. (Reviewer: Brian Bradie) 65M06 (35L20 35L70 35R10 92D25)

MR2187623 Reviewed Bahuguna, D.; Shukla, R. K. Partial functional differential equations and applications to population dynamics. *Nonlinear Dyn. Syst. Theory* 5 (2005), no. 4, 345-356. 35K55 (34G20 34K30 35A35 35Q80 35R10 92D25)

MR2173331 Reviewed Agarwal, S.; Bahuguna, D. Exact and approximate solutions of delay differential equations with nonlocal history conditions. *J. Appl. Math. Stoch. Anal.* 2005, no. 2, 181-194. (Reviewer: Hiroki Tanabe) 34K30 (34G20 34K07 35K20 35R10) **MR2143717** Reviewed Bahuguna, D.; Shukla, R. K. Evolution equations arising in the study of materials with memory. *Bull. Calcutta Math. Soc.* 97 (2005), no. 2, 173-186. 35Q72 (34G20 34K30 47D06 47N20 74D05)

MR2140323 Reviewed Bahuguna, D.; Muslim, M. Approximation of solutions to retarded differential equations with applications to population dynamics. *J. Appl. Math. Stoch. Anal.* 2005, no. 1, 1-11. 35R10 (35A35 35K20 35K55 92D25)

MR2102833 Reviewed Bahuguna, D. Existence, uniqueness, and regularity of solutions to semilinear retarded differential equations. *J. Appl. Math. Stoch. Anal.* 2004, no. 3, 213-219. (Reviewer: Sergiu Aizicovici) 34K30 (34G20)

MR2100887 Reviewed Agarwal, S.; Bahuguna, D. Method of semidiscretization in time to nonlinear retarded differential equations with nonlocal history conditions. *Int. J. Math. Math. Sci.* 2004, no. 37-40, 1943-1956. (Reviewer: Józef Banaś) 34K30 (34G20 35K90 47N20)

MR2070622 Reviewed Bahuguna, D. Existence, uniqueness and regularity of solutions to semilinear nonlocal functional differential problems. *Nonlinear Anal.* 57 (2004), no. 7-8, 1021-1028. (Reviewer: Józef Banaś) 34K30 (34G20 47D06 47N20)

MR2048793 Reviewed Bahuguna, D.; Shukla, Reeta Method of semidiscretization in time for quasilinear integrodifferential equations. *Int. J. Math. Math. Sci.* 2004, no. 9-12, 469-478. (Reviewer: Kiyoko Furuya) 34G20 (45J05 45L05 47D06 47N20)

MR1990657 Reviewed Bahuguna, D.; Shukla, Reeta Approximations of solutions to second order semilinear integrodifferential equations. *Numer. Funct. Anal. Optim.* 24 (2003), no. 3-4, 365-390. 34K30 (34A45 34G20 45J05 45N05 47D06 47N20)

MR1989583 Reviewed Bahuguna, D. Integrodifferential equations with analytic semigroups. *J. Appl. Math. Stochastic Anal.* 16 (2003), no. 2, 177-189. (Reviewer: Paolo Acquistapace) 45J05 (34G20 35B65 35K20 35K55 47D06)

MR1849564 Reviewed Bahuguna, D.; Srivastava, S. K.; Singh, S. Approximations of solutions to semilinear integrodifferential equations. *Numer. Funct. Anal. Optim.* 22 (2001), no. 5-6, 487-504. (Reviewer: Nikolay Y. Tikhonenko) 45L05 (45J05 65R20)

MR1711969 Reviewed Bahuguna, D.; Garey, L. E. Uniqueness of solutions to integrodifferential and functional integrodifferential equations. *J. Appl. Math. Stochastic Anal.* 12 (1999), no. 3, 253-260. 34K05 (34K30 45J05 45N05)

MR1663624 Reviewed Bahuguna, D.; Srivastava, S. K. Semilinear integro-differential equations with compact semigroups. *J. Appl. Math. Stochastic Anal.* 11 (1998), no. 4, 507-517. (Reviewer: Shu Chun Gao) 34K30 (45K05 47D06)

MR1623441 Reviewed Bahuguna, D. Regular solutions to quasilinear integrodifferential equations in Banach spaces. *Appl. Anal.* 62 (1996), no. 1-2, 1-9. 45J05 (47D06)

MR1409735 Reviewed Bahuguna, D.; Srivastava, S. K. Approximation of solutions to evolution integrodifferential equations. *J. Appl. Math. Stochastic Anal.* 9 (1996), no. 3, 315-322. (Reviewer: Zai-Feng Song) 45J05 (34A45 34G20 34K30)

MR1363663 Reviewed Bahuguna, D. Strongly damped semilinear equations. *J. Appl. Math. Stochastic Anal.* 8 (1995), no. 4, 397-404. 34G20 (35L70 47D06)

MR1326633 Reviewed Bahuguna, D. Rothe's method to strongly damped wave equations. *Acta Appl. Math.* 38 (1995), no. 2, 185-196. (Reviewer: Tie Hu Qin) 34G20 (35L70)

MR1312588 Reviewed Bahuguna, D. Quasilinear integrodifferential equations in Banach spaces. *Nonlinear Anal.* 24 (1995), no. 2, 175-183. (Reviewer: G. S. Jordan) 45K05 (34K30 45N05 47N20)

MR1288499 Reviewed Bahuguna, D.; Raghavendra, V. Application of Rothe's method to nonlinear integro-differential equations in Hilbert spaces. *Nonlinear Anal.* 23 (1994), no. 1, 75-81. (Reviewer: Sergiu Aizicovici) 34K30 (45N05 47H15 47H17 47N20)

MR1030110 Reviewed Bahuguna, D. Application of Rothe's method to semilinear hyperbolic equations. *Appl. Anal.* 33 (1989), no. 3-4, 233-242. (Reviewer: Mehmet Can) 34G20 (35L70)

MR1030104 Reviewed Bahuguna, D.; Raghavendra, V. Rothe's method to parabolic integro-differential equations via abstract integro-differential equations. *Appl. Anal.* 33 (1989), no. 3-4, 153-167. (Reviewer: H. R. Shen) 34G20 (45N05 47H15)

MR1017508 Reviewed Bahuguna, D.; Raghavendra, V. Application of Rothe's method to nonlinear Schrödinger type equations. *Appl. Anal.* 31 (1988), no. 1-2, 149-160. (Reviewer: W. F. Ames) 35Q20

Conference Presentations

1. D. BAHUGUNA AND R. SHUKLA:
    Regular Solution to Quasilinear
Implicit Integrodifferential
    Equations in Banach Spaces,
    Presented at the 'International
'Conference on Current Trades in
    Differential Equations and Dynamical
Systems' Held during December
    15-17, 2001 at the Department of
Mathematics, I.I.T. Kanpur.
2. D. BAHUGUNA AND R. SHUKLA:
    Method of Semidiscretization in Time
     to Implicit Quasilinear
    Integrodifferential Equations in
     Banach Space,
    presented at 'Joint 9th National
     Conference of The Vigyan Parishad
    of India on Applied and Industrial
     Mathematics and 5th Annual
    Conference of Indian Society of
     Information Theory And Applications'
    held during February 22-24, 2002 at
     the Department of Mathematics,
    School of Applied Sciences, NSIT
     Delhi.
3. R. SHUKLA AND D. BAHUGUNA:
    Application of Rothe Method to
Abstract Quasilinear Implicit
    Integrodifferential Equations in
Reflexive Banach Space,
    presented at 'National Seminar on
Recent trends in Mathematics
    and its Applications' held during
February 25-26, 2002 at the
    Department of Mathematics, Siksha-
Bhavana, Visva-Bharati,

Santiniketan.

4. R. SHUKLA AND D. BAHUGUNA:
   Global solutions of Abstract
     Inhomogeneous Quasilinear Evolution
   Equations of the Hyperbolic" Type,
   presented at 'Fifth Conference of the
     International Academy of
   Physical Sciences (CONIAPS-V, 2002)'
     to be held on April 07-09,
   2002 at Department of Mathematical
     Sciences and Computer
   Applications, Bundelkhand University,
     Jhansi.
5. D. BAHUGUNA AND R. SHUKLA:
   Approximations of solutions to second
     order semilinear evolution
   equations, presented at "Annual
     Conference of the Ramanujan
   Mathematical Society" held on June 10-
     13, 2002, at Department of
   Applied Mathematics IT-BHU, Varanasi.
6. D. BAHUGUNA:
   Evolution equations with nonlocal
   conditions,
   World Congress of Nonlinear Analysts -04,
   June 1-7, 2004 at Orlando,
   Florida, USA.