

## ACADEMIC PROFILES OF FACULTY MEMBERS

1. Name : V. SITARAMAIAH

2. Designation : PROFESSOR

3. Date of Birth : 20.01.1952



4. Educational Qualification:

University	Degree	Year	Field of Specialisation
Andhra	B.Sc.	1970	Mathematics, Physics and Chemistry
Andhra	M.Sc.	1973	Mathematics
Andhra	Ph.D.	1979	Theory of Numbers

5. (a) Work Experience (starting from present position):

University/College	Designation	Period
Pondicherry Engineering College	Professor	28.6.1999 to till date
Pondicherry Engineering College	Asstistant Professor	24.7.1989 to 27.6.1999
Pondicherry Engg. College	Lecturer	19.3.1987 to 23.7.1989
Bapatla Engineering College	Lecturer	19.3.1984 to 14.3.1987
Birla Institute of Technology and Science	Lecturer	5.11.1982 to 14.3.1984

(b) Research experience:

University / Institute	Designation	Period
Andhra University	UGC JRF	22.1.1976 to 21.1.1980
Andhra University	CSIR PDF	1.2.1980 to 31.10.1981
Andhra University	CSIR Research Associate	1.2.1981 to 31.10.1982

6. Area of Specialization: Theory of Numbers

7. Subjects teaching at Under Graduate Level: Mathematics-I, II, III and IV, Discrete Mathematics & Graph Theory

Post Graduate Level: Mathematical Foundations of Computer Science  
(MCA) and Applied Mathematics (M.Tech.(EDC))

8. Research Guidance:

Master Level:

Ph.D. : One student is working for Ph.D. (part-time)

9. Projects carried out: Nil

10. Patents: N.A.

11. Technology Transfer: N.A.

12. Research Publications:

No. of papers published in National journals	No. of papers published in International journals	Papers appeared in the Conference proceedings
15	14	4

13. No. of Books published with details: Nil

14. Visits abroad:

(i) Visited the Department of Mathematics, University of Alberta, Edmonton, Canada during May 1989 and June 1995 and collaborated with Professor M.V.Subbarao.

(ii) Visited the Institute Girard Desargues Mathematiques, university of Claud Bernard (Lyon 1), Lyon, France during Nov 24 – Dec 25, 1999 and collaborated with Professor J.L. Nicolas.

15. Any other information:

(i) Reviewer for Number theory papers, Mathematical Reviews of AMS, USA.

(ii) Bio-data is appearing in Marquis world who is who from the year 2002.

## LIST OF PULICATIONS OF DR.V. SITARAMAIAH

### Papers published in Journals:

1. Arithmetical Sums in regular convolutions, *J.Reine Angew. Math* 303/304(1978), 265-283 MR #80G: 10006.
2. Remarks on Ramanujan's sum, *Math.Student*, 46(1978), 259-262(With R.Sita Rama Chandra Rao) MR #84 c: 10043.
3. On certain multiplicative functions related to the Möbius function, *Portugaliae Mathematicae*, 38(1979), 119-134 MR #84 c: 10045.
4. Sums of reciprocals of some multiplicative functions, *Math.J.Okayama University*, 21(1979) 155-164(with D.Suryanarayana) MR #82 d: 10064a.
5. Sums of reciprocals of some multiplicative functions-II, *Indian J.Pure appl. Math.*11 (1980), 1324-1455(with D.Suryanarayana) MR #82 d: 10064b.
6. Generalisation of a problem of Evelyn-Linfoot and Page in Additive Number Theory, *Annali di Mathematica pura ed applicata*, vol. CXXVI (1980), 1-17(with D.Suryanarayana) MR #82 I: 10050.
7. The number of representations of an integer as the sum of a prime and an element in a set, *Bullettino U.M.I.*, 17-B (1980), 1096-1109(with D.Suryanarayana) MR#K: 11046.
8. An order result involving the  $\sigma$ -function, *Indian J Pure appl.math.*12 (1981), 1192-2000(with D.Suryanarayana) MR #82 k: 10056.
9. On a method of Eckford Cohen, *Bullettino U.M.I.*, (6) 1-B (1982), 1235-1251(with D.Suryanarayana) MR #84 c: 10046.
10. Asymptotic results on sums of some multiplicative functions, *Indian J.Pure appl. Math.*13 (1982), 772-784 (with D.Suryanarayana) MR #84a: 10049.
11. Asymptotic results on sums of some multiplicative functions-II, *Bulletin of the Institute of Mathematics, Academia Sinica*, 11(1983), 37-51(with D.Suryanarayana)
12. On a conjecture in a ring of arithmetic functions, *Indian J.Pure appl. Math.* 14(1983),1519-1530( with U.Maddana Swamy and G.C.Rao) MR #85g: 11013.

13. On the  $\psi$ -product of D.H.Lehmer, *Indian J.Pure appl.math.* (1985), 994-1008. MR #87 e: 11013.
14. On the  $\psi$ -product of D.H.Lehmer-II, *Indian J.Pure appl.math.* 19 (1988), 1-10, MR #89 a: 11013.
15. On the existence of Unity in Lehmer's  $\psi$ -product ring, *Indian J.Pure appl.math.* 20 (1989), 1184-1190, MR # 90 m: 11015.
16. On a class of  $\psi$ -products preserving multiplicativity, *Indian J.Pure appl.math.* 22 (1991), 819-832 (with M.V.Subba Rao) MR #92 h: 110006.
17. Convolutions with unbounded Unity, *Canad.Math.Bull.* 34 (1991), 542-546 (with M.V.Subba Rao) MR #92 j: 110003.
18. Asymptotic formulae for sums of reciprocals of some multiplicative functions, *J.Ind.Math.Soc.* 57 (1991), 157-167 (Hansraj Gupta Memorial Volume) (with M.V.Subba Rao)
19. The maximal order of certain arithmetic functions, *Indian J.Pure appl.math.* 24 (1993), 347-355 (with M.V.Subba Rao)
20. On a class of  $\psi$ -products preserving multiplicativity-II, *Indian J.Pure appl.math.* 25 (1994), 1233-1242. (with M.V.Subba Rao)
21. The identical equation in  $\psi$ -products, *Proc.Amer.Math.Soc.* 124, (1996), 361-369 (with M.V.Subba Rao)
22. On regular  $\psi$ -convolutions, *J.Ind.Math.Soc.* 64 (1997), 131-150 (with M.V.Subba Rao)
23. On the equation  $s^*(s^*(n)) = 2n$ , *Utilitas Mathematica*, 53 (1998), 101-124 (with M.V.Subba Rao)
24. On Unitary multiperfect numbers, *Nieuw Archief Voor Wiskunde* 16, (1998), 57-61 (with M.V.Subba Rao)
25. On the existence of Unity In Lehmer's  $\psi$ -product ring-II, *Indian.J.Pure appl. Math.* 33 (2002), 1503-1514 (With J.L.Nicolas)

26. On a class of  $\psi$ -convolutions characterized by the identical equation, *Journal de theorie des nombres de Bordeaux* 14(2002),561-583 (With J.L.Nicolas)
27. Three theorems of Sierpinski and their unitary analogues, Bulletin of the Institute of Combinatorics and applications,14(2004),81-86.(with M.V.Subbarao).
28. A characterization of Unitary convolution through its non-trivial identical equation (with Prof.M.V.Subbarao) To appear in Indian Journal of Pure and Applied Math.
29. Unitary analogues of some formulae of Ingham (with Prof.M.V.Subbarao) To appear in Ars Combinatorica

**Papers appeared in the Conference Proceedings:**

1. On certain divisor sums over square-full integers, in the “*Proceedings of the first Conference on Number Theory*”, Mysore, August 1979-Mat Science Report-101, A publication of the Institute of Mathematical Sciences, Adayar, Madras, India, pp 98-109(with D.Suryanarayana)
2. On certain sums involving the maximal k-free divisor function, in the “*Proceedings of the second conference on Number Theory*”, Ooty, August 1980-Mat Science Report-104, A publication of the Institute of Mathematical Sciences, Adayar, Madras, India, pp51-84 (with A.Siva Rama Sarma and G.Sri Rama Chandra Murthy) MR#83 d: 10053.
3. Some asymptotic results involving powers of arithmetic functions, in *Number Theory*, Springer Lecture notes in Mathematics, No.1395, Madras (1987), pp.201-234 (with M.V.Subba Rao) MR#90 j: 11094.
4. Maximal order of certain sums of the powers of the Logarithmic function (with Prof.M.V.Subbarao) To appear in the Proceedings of the International conference conducted at IISc campus ,Bangalore in Dec.2003 on the occasion of 70 th Birthday of Prof. K.Ramachandra .

**General articles Published:**

1. My association with Prof.M.V.Subba Rao, *Andhra Pradesh Association of Mathematics Teachers*, Journal 2000, pp13-14.

### **Conferences attended:**

1. Attended the Indian Mathematical Society conferences held at Trivandrum (1976), Aligarh(1977), Bangalore(1980), Bhagalpur (1982), Delhi(1989) and Ahmednagar (1997) and presented papers.
2. Attended the Number Theory conferences held at Mysore (1979) and Ooty(1980) and presented papers.
3. Attended the International conference held at Anna University, Madras (1987) and presented a paper.
4. Delivered an invited talk at the National Seminar on Number Theory and its applications organised by the department of Mathematics, Sri Venkateswara University Tirupathy during March 22-24,2001.
5. Invited participant at the Conference on L-functions, organised by the Institute of Mathematical Sciences, Chennai, during 3<sup>rd</sup> Jan - 5<sup>th</sup> Jan, 2002.
6. Invited speaker at the Andhra Pradesh Society for Mathematical Sciences, XII Congress conducted by the Department of Mathematics, Osmania University, Hyderabad, during 12-14 Dec.2003.
7. Invited speaker at the National Conference on New trends in Number Theory organized by the Department of Mathematics, Osmania University, Hyderabad during 18-19 March, 2006.

1. Name : P.A. PADMANABHAM

2. Designation : PROFESSOR & HEAD

3. Date of Birth : 14.08.1954

4. Educational Qualifications:



University	Degree	Year	Field of Specialisation
Andhra	B.Sc.	1975	Maths, Physics, Chemistry
Jodhpur	M.Sc.	1977	Mathematics
Jodhpur	Ph.D.	1982	Special Functions

5. (a) Work Experience (starting from present position):

University / College	Designation	Period
Pondicherry Engineering College	Professor	March.2003 to till date
Pondicherry Engineering College	Assistant Professor	Oct. 1992 to Feb.2003
Pondicherry Engineering College	Lecturer	April 1987 to Oct. 1992
S.R.M. Engineering College	Lecturer	Oct. 1985 to March 1987
A.N.R.College	Lecturer	July 1984 to March 1985
D.B. Jain College	Lecturer	July 1983 to June 1984

(b)Research experience:

University / Institute	Designation	Period
Jodhpur University	JRF & SRF	August 1977 to Jan. 1982
Indian Institute of Technology, New Delhi	PDF	February 1982 June 1983

6. Area of Specializations: Special Functions & Integral Transforms.

7. Subjects teaching at Under Graduate Level: All Engineering Mathematics  
Post Graduate Level: Subjects.

8. Research Guidance: Nil  
Master's Level Ph.D.

9. Projects carried out: Nil

10. Patents: N.A.

11. Technology Transfer: N.A.

12. Research Publications:

No. of papers published in National journals	No. of papers published in International journals	Papers appeared in the Conference proceedings
16	3	8

13. No. of Books published with details: Nil

### **LIST OF PUBLICATIONS OF DR. P.A. PADMANABHAM.**

#### **Papers published in Journals:**

1. A Note On Integral Representations for certain Hypergeometric Functions of Three variables, Acta Mexicana de ciencia y Tecnologia, vol. XIII, Nos. 35-38 1979, pp. 55-58.
2. Some results involving New Class of Polynomials, Ranchi Uni. Math. Jour., Vol.10, 1979, pp. 1-10.
3. On Lauricella's n-variable function  $F_A^{(n)}$ , Journal of Indian Institute of Science, 62, Feb 1980, pp.17-23.
4. A Theorem on Integral Transforms, J. Sci. Res. Vol.2, No.3, 1980, pp.187-188.
5. Fourier Series for Generalized Lauricell's Function, Journal of M.A.C.T., Vol.13, 1980, pp.49-54.
6. Integrals involving the Generalized Hypergeometric Function, Indian J. Pure and Applied Math., 12 ( 3 ), March 1981, pp. 388- 392.
7. On a Generalized Integral Transform-II, . Indian J. Pure and Appl. Math., 12(10), October, 1981, pp.1235-1239.

8. On Erdelyi's  $H_{s,p}$ -function, Journal of M.A.C.T., Vol.14, 1981, pp. 887-890.
9. A Generating function for Generalized Hypergeometric Polynomial  
Rev.Tech. Ing. Univ. Zulia, Vol. 5, No.1, 1982, pp. 101- 111.
10. A note on Fractional Integration, Vijnana Parishad Anusandana Patrika,  
Vol.25, No.4, October 1982, pp.347-351.
11. On Hypergeometric Functions of Three Variables, Vijnana Parishad  
Anusandana Patrika, Vol.25, No.4, October 1982, pp.311-314.
12. An expansion formula for multiple Hypergeometric Series, I.J.M., Vol.25,  
No.2, May 1983.
13. Contour Integral associated with Legendre polynomial and H-function, Math.  
Edu., Vol. 23, No.4, Dec. 1989.
14. Some Hypergeometric Transformation, Indian J. Pure and Appl. Math.,  
12(10), October, 1998, pp.1235-1239.
15. Two results on three variable hypergeometric function, Indian J. Pure and  
Appl. Math., 12(10), October, 1999, pp.1235-1239
16. Summation formulas associated with the Lauricella Function  $F_A^{(r)}$   
Applied Mathematics Letters, (13), 2000, pp. 65-70.
17. Expansions for Quadruple Hypergeometric Functions, Math. Education,  
Vol. XXXVII, No.1, March 2003, pp. 46-49.
18. Expansions for Multiple Hypergeometric function, Ganita, Vol. 54, No.1  
2003, pp. 17-20.
19. An improper integral involving Hermite and Laguerre Polynomials,  
Journal of M.A.C.T., Vol. 34, 35, 2005, pp.24-26.

**Papers presented in conferences:**

1. 53<sup>rd</sup> annual conference of Indian Mathematical Society held at Gorakpur,  
India, 1987, presented a paper entitled "A RESULT ON LAURICELLA  
FUNCTION".

2. 56<sup>th</sup> annual conference of Indian Mathematical Society held at Surat, India, 1990, presented a paper entitled “ SOME RESULTS ON GENERALISED LAURICELLA’S FUNCTION”.
3. 57<sup>th</sup> annual conference of Indian Mathematical Society held at , Aligarh, India, 1991, presented a paper entitled “CERTAIN THEOREMS ON GENERATING FUNCTIONS ”.
4. 82<sup>nd</sup> annual conference of Indian Science Congress, held at Calcutta, India, 1995, presented a paper entitled “TWO SUMMATIONS FOR F ”.
5. 63<sup>rd</sup> annual conference of Indian Mathematical Society held at Ahmednagar, India, 1997, presented a paper entitled “SOME HYPERGEOMETRIC TRANSFORMATIONS”.
6. National Conference on Approximation Theory and Application, held at Chhatarpur, 1999, presented a paper entitled “ TWO RESULTS ON THREE VARIABLE HYPERGEOMETRRI FUNCTIONS”.
7. International Conference on Mathematics, held at Lucknow University, Lucknow, India, 2000, presented a paper entitled “ A NOTE ON THREE VARIABLE HYPERGEOMETRIC FUNCTION”.
8. National Conference on Mathematical& Statistical Methods, held at Thapar Inst. of Engg. Tech., Patiala, Nov. 2001, presented a paper entitled “ON AN APPLICATION OF RAMANUJAN’S RESULT ”.

1. Name : R. SEKAR
2. Designation : PROFESSOR
3. Date of Birth : 07.06.1954
4. Educational Qualification:



University	Degree	Year	Field of Specialisation
University of Madras	B.Sc.	1974	Maths, Physics, Chemistry
University of Madras	M.Sc.	1977	Mathematics
Bangalore University	M.Phil.	1979	Mathematics
Bangalore University	Ph.D.	1984	Fluid Mechanics

5. (a) Work Experience (starting from present position):

University/College	Designation	Period
Pondicherry Engineering College	Professor	11.1.06 to till date
- do -	Assistant Professor	11.1.98 to 10.1.06
- do -	Senior Lecturer	31.5.90 to 10.1.98
- do -	Lecturer	31.5.85 to 30.5.90

(b) Research Experience:

University / Institute	Designation	Period
Bangalore University	INSA - JRF	28.4.78 to 31.12.80
Bangalore University	UGC DSA – SRF	1.01.81 to 10.8.84
REC, Trichy	Research Associate	13.8.84 to 30.5.85

6. Area of Specializations: Ferro-fluids, Fluid Mechanics

7. Subjects teaching at Under Graduate Level: All Engineering Mathematics

8. Research Guidance:

Master's Level: Nil

Ph.D.: (i) No of candidates obtained their degrees: 2

(ii) No of candidates currently working: 1

9. Projects carried out: Nil

10. Patents: Nil

11. Technology Transfer: Nil

12. Research Publications:

No. of papers published in National journals	No. of papers published in International journals	Papers appeared in the Conference proceedings
6	14	1

13. No. of Books published with details: Nil

### **LIST OF PUBLICATIONS OF DR. R. SEKAR**

#### **Papers published in Journals:**

1. Propagation of hydromagnetic waves in a rotating non-isothermal compressible atmosphere: WKB approximation. *Phys. Fluids*. Vol. 25, 1558-1561, 1982. (*with N.Rudraiah and M.Venktachalappa*)
2. Finite amplitude tidal waves at the interface between two fluid saturated porous media. *Ind. J. Pure and Appl. Maths*. Vol. 14, 207-221, 1983. (*with M.Venktachalappa and N.Rudraiah*)
3. Internal gravity waves in a flow through porous medium. *Ind. J. Tech*. Vol. 21, 495-498, 1983. (*with M.Venktachalappa*)
4. Ferroconvective instability of fluids saturating a porous medium. *Int. J. Engng. Sci*. Vol. 29, 1259-1267, 1991. (*with G.Vaidyanathan and R. Balasubramanian*)
5. The ferroconvection in fluids saturating a rotating densely packed porous medium. *Int. J. Engng. Sci*. Vol. 31, 241-250, 1993. (*with G.Vaidyanathan and A.Ramanathan*)
6. Convective instability of magnetized ferrofluid in a rotating porous medium. *Int. J. Engng. Sci*. Vol. 31, 1139-1150, 1993. (*with G.Vaidyanathan*)
7. Ferrothermohaline convection in a porous medium. *J. Magnsm. Mag. Matls*. Vol. 149, 137-142, 1995. (*with G.Vaidyanathan and A.Ramanathan*)
8. Ferroconvection in an anisotropic porous medium. *Int. J. Engng. Sci*. Vol. 34, 399-405, 1996. (*with G.Vaidyanathan and A.Ramanathan*)

9. Ferrothermohaline convection. *J. Magnsm. Mag. Matls.* Vol. 176, 321-330, 1997. *(with G.Vaidyanathan and A.Ramanathan)*
10. Effects of rotation and anisotropy of a porous medium on ferroconvection. *Ind. J. Engg. and Mat. Sci.* Vol. 5, 436-440, 1998. *(with G.Vaidyanathan and A.Ramanathan)*
11. Effect of rotation on ferrothermohaline convection saturating a porous medium. *Ind. J. Engg. and Mat. Sci.* Vol. 5, 445-452, 1998. *(with G.Vaidyanathan and A.Ramanathan)*
12. Effect of rotation on ferrothermohaline convection. *J. Magnsm. Mag. Matls.* Vol. 218, 266-272, 2000. *(with G.Vaidyanathan and A.Ramanathan)*
13. Bulk service by a single server with vacation and feed back facility. *Bull. of Pure and Appl. Sci.* Vol. 20, 311-318, 2001. *(with Lakshmi Srinivasan, N.Renganathan and R.Kalayanraman)*
14. The effect of magnetic field dependent viscosity on ferroconvection in a rotating sparsely distributed porous medium. *J. Magnsm. Mag. Matls.* Vol. 250, 65-76, 2002. *(with G.Vaidyanathan, R.Vasanthakumari and A.Ramanathan)*
15. Effect of magnetic field dependent viscosity on ferro convection in rotating medium. *Ind. J. Pure and Appl. Phy.* Vol. 40, 159-165, 2002. *(with G.Vaidyanathan and A. Ramanathan)*
16. Ferroconvection in an anisotropic densely packed porous medium. *Ind. J.Chem.Tech.* Vol. 9, 446-449, 2002. *(with G.Vaidyanathan and A.Ramanathan)*
17. Computational analysis of bulk service queues with vacation using analytical approach and steady state probabilities. Accepted for publication in *Int. J. of Management and Systems.* *(with R.Kalayanaraman and Lakshmi Srinivasan)*
18. Computation of queue length probabilities for bulk service queues with vacation and feed back. *Int. J. Information and Management Sci.* Vol.14, 15-25, 2003. *(with R.Kalayanaraman and Lakshmi Srinivasan)*
19. Ferroconvection induced by point heat source. *Ind. J. Engg. And Matl. Sci.* Vol. 11, 331-337, 2004. *(with G.Vaidyanathan and R.Vasanthakumari)*

20. Soret-driven ferrothermohaline convection. *J. Magnsm. Mag. Matls.* Vol. 288, 460-496, 2005. (with *G.Vaidyanathan, R.Hemalatha, R.Vasanthakumari and S.Sebdhlnathan*)

### **Papers appeared in Conference Proceedings**

1. The effect of porosity on double diffusive molecular diffusion. To appear in Proceedings of Int. Conference on Mathematical Modeling, Roorkee University, Roorkee. Jan 29<sup>th</sup> – 31<sup>st</sup>, 2001. pp 25-30. (with *R.Balasubramanian, G.Vaidyanathan and R.Vasanthakumari*)

### **Papers presented in Conferences:**

1. Finite amplitude waves propagating through porous media. Presented at 23<sup>rd</sup> National Congress of ISTAM held at Regional Engineering College, Warangal. Dec.1978.
2. Finite tidal waves in fluid saturated porous media. Presented at 24<sup>th</sup> National Congress of ISTAM held at Regional Engineering College, Rourkela. Feb. 1980.
3. Numerical study of finite amplitude tidal waves at the interface between two fluid saturated porous media. Presented at 26<sup>th</sup> National Congress of ISTAM held at Coimbatore Institute of Technology, Coimbatore, December 1981
4. Reflection of internal gravity waves in a perfectly conducting fluid with shear flow. Presented at 27<sup>th</sup> National Congress of ISTAM held at Jadavpur University, Calcutta. Dec. 1982. (Adjudged as the best paper and received '**PRESIDENT OF INDIA**' cash award).
5. Reflection of internal gravity waves in a rotating fluid with shear flow. Presented at 28<sup>th</sup> National Congress of ISTAM held at Andhra University, Waltair. Dec. 1983.
6. Transmission of tidal wave propagation in a porous medium. Presented at 34<sup>th</sup> National Congress of ISTAM held at PSG College of Technology, Coimbatore. Dec. 27<sup>th</sup> to 30<sup>th</sup>, 1989.
7. Double diffusive ferrothermohaline convection in loosely packed porous medium. Presented at 7<sup>th</sup> International Conference on Magnetic Fluids held at Bhavnagar University, Bhavnagar. Jan. 9<sup>th</sup> to 14<sup>th</sup>, 1995.

8. Ferrothermohaline convection in densely packed porous medium. Presented at 7<sup>th</sup> International Conference on Magnetic Fluids held at Bhavnagar University, Bhavnagar. Jan. 9<sup>th</sup> to 14<sup>th</sup>, 1995.
9. Effect of rotation and anisotropy of a porous medium on ferroconvection. Presented in National Conference on Magnetic Fluids held at Narmada College of Science and Commerce, Bharuch. Oct. 16<sup>th</sup> – 18<sup>th</sup>, 1997.
10. Effect of rotation on ferrothermohaline convection saturating a porous medium. Presented in National Conference on Magnetic Fluids held at Narmada College of Science and Commerce, Bharuch. Oct. 16<sup>th</sup> – 18<sup>th</sup>, 1997.
11. Oberbeck convection of ferrofluid through vertical porous medium. Presented in National conference on Magnetic Fluids held at Pondicherry Engineering College, Pondicherry. March 29<sup>th</sup> to 31<sup>st</sup>, 2000.
12. The effect of magnetic field on viscosity of ferrofluid convection. Presented in National conference on Magnetic Fluids held at Pondicherry Engineering College, Pondicherry. March 29<sup>th</sup> to 31<sup>st</sup>, 2000.
13. The effect of magnetic field dependent viscosity on ferroconvection in a rotating medium. Presented in National conference on Magnetic Fluids held at Pondicherry Engineering College, Pondicherry. March 29<sup>th</sup> to 31<sup>st</sup>, 2000.
14. Thermal convection in a fluid saturating porous medium with rotation vector oblique to gravity. Presented in National Seminar on Recent Advances in Fluid Mechanics held at Gulbarga University, Gulbarga. Sept. 11<sup>th</sup> and 12<sup>th</sup>, 2002.
15. Ferroconvection induced by point heating source. International Workshop on Recent Advances in Nanotechnology of Magnetic Fluids, National Physical Laboratory, New Delhi. January 22-24, 2003.
16. Gradual reflection of internal gravity waves in a rotating fluids. National conference on nonlinear waves and diffusion. School of Mathematics, Madurai Kamaraj University, Madurai. Nov. 12<sup>th</sup> and 13<sup>th</sup>, 2003.

1. Name : J. JAYAKUMAR
2. Designation : ASISTANT PROFESSOR
3. Date of Birth : 03.06.1966
4. Educational Qualifications:



University	Degree	Year	Field of Specialisation
Bharathidasan University	B.Sc.	1986	Mathematics
Bharathidasan University	M.Sc.	1988	Applied Mathematics
Bharathidasan University	M.Phil.	1990	Mathematics
Bharathidasan University	Ph.D.	1996	Numerical Mathematics

5. (a) Work Experience (starting from present position):

University/College/Institution	Designation	Period
Pondicherry Engineering College, Pondicherry.	Assistant Professor	23.7.2003 to till date
Pondicherry Engineering College, Pondicherry.	Senior Lecturer	23.7.2000 to 22.7.2003
Pondicherry Engineering College, Pondicherry.	Lecturer	23.7.1996 to 22.7.2000
Central Water and Power Research Station, Pune.	Research Assistant	27.9.1993 to 19.7.1996

(b) Research experience:

University / Institution	Designation	Period
Bharathidasan University	UGC – JRF	01.10.1989 to 31.8.1992
Bharathidasan University	CSIR - SRF	01.09.1992 to 25.09.1993

6. Area of Specializations: Numerical Mathematics, Scientific computing.

7. Subjects teaching:

Under Graduate Level: All Engineering Mathematics papers I-IV, Numerical Methods and Computational Methods.

Post Graduate Level: Numerical Analysis (M.Sc.), Mathematical Foundations of Computer Science (MCA).

8. Research Guidance:

Master's Level: Nil

Ph.D. : Nil

9. Projects carried out: Nil

10. Patents : N.A.

11. Technology Transfer: N.A.

12. Research Publications:

No. of papers published in National journals	No. of papers published in International journals	Papers appeared in the Conference proceedings
Nil	5	2

13. Number of Books published with details: Nil

14. Visits to other institutions:

Visited Department of Mathematics, Indian Institute of Technology, Guwahati, Assam for 45 days during 21.11.2004 to 05.01.2005 and collaborated with Dr. S. Natesan, Assistant Professor, through a project funded by National Board for Higher Mathematics, Department of Atomic Energy, Govt. of India.

### **LIST OF PUBLICATIONS**

#### **Papers published in International Journals:**

1. A computational method for solving singular perturbation problems, Applied Mathematics and Computation, Vol. 55: 31-48 (1993) (with Dr. N. Ramanujam).
2. A numerical method for singular perturbation problems arising in chemical reactor theory, Computers & Mathematics with Applications Vol. 27(5) 83-99 (1994) (with Dr. N. Ramanujam).
3. A computational method for quasi-linear singular perturbation problems, Applied Mathematics and Computation Vol. 71(1):1-14 (1995) (with Dr. N. Ramanujam).

4. Improvement of numerical solution by boundary value technique for singularly perturbed one dimensional reaction diffusion problem, Applied Mathematics and Computation Vol. 142 (2-3): 417-447 (2003).
5. Parameter uniform numerical method for singularly perturbed turning point problems exhibiting boundary layers, Journal of Computational and Applied Mathematics Vol.158 (1): 121-134 (2003) (with Dr. S. Natesan and Dr. J. Vigo-Aguair).

#### **Papers appeared in Conference proceedings:**

1. J. Jayakumar, Method of inner boundary condition: A new treatment for solving singular perturbation problems, appeared in the proceedings of the International Conference on "Theory of Differential Equations and Application to Oceanography", December 17-21, 1990 conducted by the Department of Mathematics, Goa University, Goa.
2. J. Jayakumar, Uniformly convergent numerical method for turning point problems, Proceedings of the international conference on Computational and Mathematical Methods in Science and Engineering (CMMSE 2002) Vol IV, Alicante Spain (with Dr. S. Natesan and J. Vigo-Aguair).

#### **Papers presented in Conferences:**

1. J. Jayakumar, A numerical method for singularly perturbed differential equation occurring in the study of chemical reactor flow, International Conference on **Advances in Computational Mathematics** held between January 5-9, 1993 conducted by the Department of Mathematics, Indira Gandhi National Open University, New Delhi.

1. Name : G. AYYAPPAN
2. Designation : ASSISTANT PROFESSOR
3. Date of Birth : 31.7.1967
4. Educational Qualification:



University	Degree	Year	Field of Specialisation
Bharathidasan University	B.Sc.	1987	Mathematics
Bharathidasan University	M.Sc.	1989	Mathematics
Annamalai University	M.Phil.	1990	Mathematics
Annamalai University	Ph.D.	1996	Stochastic Processes

5. (a) Work Experience (starting from present position):

University/College	Designation	Period
Pondicherry Engineering College, Pondicherry	Assistant Professor	10.7.2003 to till date
Pondicherry Engineering College, Pondicherry	Senior Lecturer	10.7.2000 to 9.7.2003
Pondicherry Engineering College, Pondicherry	Lecturer	10.7.1996 to 9.7.2000
Sri Ram Engineering College, Chennai	Lecturer	2.7.1995 to 9.7.1996

(b) Research experience:

University / Institution	Designation	Period
Annamalai University	University Research Fellow	1992 to 1994

6. Area of Specializations: Probability Theory, Stochastic Processes, Queueing Theory

7. Subjects teaching at

Under Graduate Level: All Engineering Mathematics papers, Probability and Random Processes, Queueing Theory, Statistics.

Post Graduate Level: Probability and Random Processes, Statistics.

8. Research Guidance:

Master's Level: Nil

Ph.D. : One student currently working for Ph.D. (part-time)

9. Projects carried out : Nil

10. Patents : Nil

11. Technology Transfer : Nil

12. Research Publications:

No. of papers published in National journals	No. of papers published in International journals	Papers appeared in the Conference proceedings
5	2	1

13. No. of Books published with details: Nil

**LIST OF PUBLICATIONS OF DR. G.AYYAPPAN**

**Papers published in Journals:**

1. "Bulk Service Queue with Accessible and Non-accessible Batches and with Vacation", -Proceedings of Neural, Parallel and Scientific Computations, Vol.1, 1995, pp.22-27. (with N.Renganathan)
2. "Markovian Bulk Service Queue with Accessible Service Systems with Vacation and with Additional Server" - International Journal of Management and Systems, Vol.12, No.3, 1996, pp.331-344 (with N.Renganathan).

3. "A Preemptive Priority Queue with Accessible Batch Service and Heterogeneous Arrivals"- International Journal of Information and Management Sciences, Vol.8, No.1, 1997, pp.63-72 (with N.Renganathan).
4. "On Bulk service Markovian Queue with Service Batch Size Dependence and with Accessible and Non-Accessible Batches"- Bulletin of Pure and Applied Sciences, Vol.16E, No.1, 1997, pp45-54(with N.Renganathan).
5. "A Single Server Vacation Queue with Balking and with Single and Batch Service" - Bulletin of Pure and Applied Sciences, Vol.19E, No.2, 2000, 521-528(with R.Kalyanaraman).
6. "Two Units Connected in Series with Accessible and Non-Accessible Batch Service and Random Breakdown in Unit 2", Bulletin of Pure and Applied Sciences, Vol.20E, No.2, 2001, pp.379-389(with N.Renganathan).
7. "A Vacation queue with Instantaneous Feedback" - Accepted for publication in the Journal of Octogon, Vol.10 (No.2), 2002, pp.583-591 (with R.Kalyanaraman).
8. "A Vacation Queue with Balking and with State Dependent Service Rate", Bulletin of Pure and Applied Sciences, Vol. 21E, (No.1), 2002,pp.51-57.

### **Papers presented in Conferences:**

1. A research paper entitled "A Preemptive Priority Queue with Accessible Batch Service and Heterogeneous Arrivals" presented in the XV Annual National Conference of Indian Society for Probability and Statistics organised by the Department of Statistics, Manonmaniam Sundaranar University, Tirunelveli, December 23-23, 1994.
2. A research paper entitled "Bulk Service Queue with Accessible and Non-accessible Batch Service and with Vacation" presented in the International Conference on Neural, Parallel and Scientific Computations held at Department of Mathematics, Morehouse College, Atlanta, Georgia, USA, 1995.
3. A research paper entitled " Bulk Service Queue with Accessible and Non-Accessible Batch Service and with a Vacation - A Survey" presented in the National Conference on Mathematical and Computational Models, held at Department of Mathematics and Computer Applications, PSG College of Technology, Coimbatore during December 27-28, 2001.

4. A research paper entitled “A Vacation Queue with Feedback” presented in the National Symposium on Statistical Methods and Applications (NSSMA) held at Department of Statistics, Annamalai University, Annamalainagar during March 15-16, 2002.
5. A research paper entitled “A Single Server Queue with Batch Markovian Arrival Process and with Vacation” (with R.Kalyanaraman), presented in the International Conference on Stochastic Modelling and IV International Workshop on Retrial Queues during December 17-21, 2002 at Cochin University of Science and Technology, Cochin.

1. Name : S. MANGAYARCARASSY
2. Designation : ASSISTANT PROFESSOR
3. Date of Birth : 06.03.1965
4. Educational Qualification :



University	Degree	Year	Field of Specialisation
Madras University	B.Sc.	1985	Mathematics
Madras University	M.Sc.	1987	Mathematics
Pondicherry University	M.Phil.	1988	Mathematics
Pondicherry University	Ph.D.	1993	Commutative Algebra

5.(a) Work Experience (starting from present position):

University/College	Designation	Period
Pondicherry Engineering College, Pondicherry	Assistant Professor	1.7.2006 to till date
Pondicherry Engineering College, Pondicherry	Senior Lecturer	1.7.2003 to 30.6.2006
Pondicherry Engineering College, Pondicherry.	Lecturer	1.7.1999 to 30.6.2003
Community College, Pondicherry.	Part-time Lecturer	1.10.98 to 30.6.99
Manonmaniam Sundaranar University, Tirunelveli.	Lecturer	30.10.92 to 15.9.98

(b) Research experience:

University / Institution	Designation	Period
Pondicherry University	NBHM Research Fellow	Dec.1998 to Oct. 1992

6. Area of Specializations: Commutative Algebra and Homological Algebra.

7. Subjects teaching at Under Graduate Level: B.Tech. Engineering Mathematics

Post Graduate Level: MCA Mathematics course.

8. Research Guidance: Guiding one part time Ph.D.

9. Projects carried out: Nil

10. Patents : N.A.

11. Technology Transfer: N.A.

12. Research Publications:

No. of papers published in National journals	No. of papers published in International journals	Papers appeared in the Conference proceedings
1	3	-

13. No. of Books published with details: Nil

14. Invited talks:

Given a series of lectures in Commutative Algebra in the “ International Workshop on Commutative Algebra and Algebraic Geometry” , conducted by St.Joseph College, Kerala, from 18.07.05 to 23.07.05.

### **LIST OF PUBLICATIONS OF DR. S. MANGAYARCARASSY**

#### **Papers published in Journals:**

1. Noetherian generalized quotient rings, Journal of Ramanujam Math. Soc. Vol. 7(1), (1992) pp. 43-51.
2. A note on flatness and injectivity of simple modules over a commutative ring (with P. Jothilingam), Comm. in Algebra Vol. 21(2), (1993) pp. 675-678.
3. A note on flat modules and a theorem of Jondrup (with T. Duraivel ) Comm. in Algebra Vol. 21(4), (1993) pp. 1421-1426.
4. Regular sequences, Projective dimension and criteria for Regularity of local rings, (with P. Jothilingam) Proc. of Amer. Math. Soc., Vol. 120, No.4, (1994) pp. 1017-1019.

1. Name : T.V. SATYA SEKHAR

2. Designation : ASST. PROFESSOR

3. Date of Birth : 24-08-1966



4. Educational Qualification :

University	Degree	Year	Field of Specialisation
Andhra	B.Sc.	1986	Maths, Physics and Chemistry
Andhra	M.Sc.	Feb 1989	Applied Mathematics
IIT, Madras	Ph.D.	1995	Computational Fluid Dynamics

5. (a) Work Experience (starting from present position):

University/College	Designation	Period
Pondicherry Engineering College	Asst. Professor	24.03.2007 to till date
Pondicherry Engineering College	Senior Lecturer	24-03-2004 to 23.03.2007
Pondicherry Engineering College	Lecturer	24-03-2000 to 23-03-2004
Vellore Engineering College	Assistant Professor	10-02-2000 to 15-03-2000
P.B. Siddhartha P.G. Centre, Vijayawada	Lecturer	11-08-1994 to 09-02-2000

(b) Research experience:

University/Institution	Designation	Period
Department of Mathematics, IIT Madras.	JRF	14-02-1991 to 13-2-1993
---do---	SRF	14-02-1993 to 10-01-1994
---do---	CSIR-SRF	11-01-1994 to 09-08-1994

6. Area of Specializations: Computational Fluid Dynamics

7. Subjects teaching at Under Graduate Level: B.Tech. Engineering Mathematics and Elective: Computational Fluid Dynamics for 3<sup>rd</sup> year B. Tech students

Post Graduate Level: Nil

8. Research Guidance: Nil

Master's Level : Nil

Ph.D. : Nil

9. Projects carried out : Nil

10. Patents : N.A.

11. Technology Transfer : N.A.

12. Research Publications:

No. of papers published in National journals	No. of papers published in International journals	Papers appeared in the Conference proceedings
1	14	7

13. No. of Books published with details: Nil

## LIST OF PUBLICATIONS

1. **T. V. S. Sekhar**, R. Sivakumar and T. V. R. Ravi Kumar  
Effect of magnetic Reynolds number on 2-D hydromagnetic flow around a cylinder.  
Accepted for publication in **Int. J. Num. Meth. in Fluids** [2008].
2. **T. V. S. Sekhar**, R. Sivakumar, T. V. R. Ravi Kumar and K. Subbarayudu  
High Reynolds number incompressible MHD flow under low  $R_m$  approximation.  
*Int. J. Non-linear Mechanics*, **43** (2008), 231-240.
3. **T. V. S. Sekhar**, R. Sivakumar, H. Kumar and T. V. R. Ravi Kumar  
Effect of aligned magnetic field on the steady viscous flow past a circular cylinder.  
*Applied Mathematical Modeling*, **31** (2007), 130 - 139.
4. **T. V. S. Sekhar**, R. Sivakumar and T. V. R. Ravi Kumar  
Flow around a circular cylinder in an external magnetic field at high Reynolds numbers .  
*Int. J. of Numerical Methods for Heat and Fluid Flow*, **16** (2006), 740-759.
5. **T. V. S. Sekhar**, R. Sivakumar, H. Kumar  
Numerical solutions for steady viscous flow past a circular cylinder in an aligned magnetic field.  
*Journal of Computational and Applied Mechanics* (2005) [Online]
6. **T. V. S. Sekhar**, R. Sivakumar and T. V. R. Ravi Kumar  
Incompressible conducting flow in an applied magnetic field at Large interaction parameters.  
*Applied Mathematics Research Express*, **2005** (2005), 229-248.
7. **T. V. S. Sekhar**, R. Sivakumar and T. V. R. Ravi Kumar  
Magnetohydrodynamic flow around a sphere.  
*Fluid Dynamics Research*, **37** (2005) 357-373.

8. **T. V. S. Sekhar**, R. Sivakumar and T. V. R. Ravi Kumar  
Drag and pressure fields for the MHD flow around a circular cylinder at intermediate Reynolds numbers.  
J. Applied Mathematics, **2005** (2005), 183-203.
  9. **T. V. S. Sekhar**, R. Sivakumar, H. Kumar  
Numerical study of steady flow past a sphere in an aligned magnetic field.  
Computational Methods in Applied Mathematics, **4** (2004) 215-227.
  10. **T. V. S. Sekhar**, T. V. R. Ravi Kumar and H. Kumar  
MHD flow past a sphere at low and moderate Reynolds numbers.  
Computational Mechanics, **31** (2003) 437- 444.
  11. **T. V. S. Sekhar** and T. V. R. Ravi Kumar  
Multigrid solution of the non-linear Navier-Stokes equations for the steady viscous flow past a sphere at low and moderate Reynolds numbers.  
Int. J. of Non-Linear Differential Equations Theory-Methods and Applications, **7** (2002) 160-174.
  12. C. V. Raghava Rao and **T. V. S. Sekhar**  
MHD flow past a circular cylinder - a numerical study.  
Computational Mechanics, **26** (2000) 430-436.
  13. C. V. Raghava Rao and **T.V.S. Sekhar**  
Translation of a sphere in a rotating viscous fluid - a numerical study.  
Int. J. for numerical methods in fluids, **20** (1995) 1253-1262.
  14. C. V. Raghava Rao and **T. V. S. Sekhar**  
Numerical solution of the slow translation of a sphere moving along the axis of a rotating viscous fluid.  
Computational Fluid Dynamics, **1** (1993) 351-359.
  15. C. V. Raghava Rao and **T.V.S. Sekhar**  
The flow past a spinning sphere in a slowly rotating fluid at small Reynolds numbers - a numerical study.  
Int. J. Engineering Sciences, **31** (1993) 1219-1231.
- International Conferences (India):**
16. **T. V. S. Sekhar** , R. Sivakumar, T. V. R. Ravi Kumar and K. Subbarayudu.  
Effect of magnetic Reynolds number on the electrically conducting flow.  
Proceedings of the 3<sup>rd</sup> Int. conference on Fluid Mechanics and Fluid power during Dec.7-9, 2006 at ,  
**IIT Bombay** .
  17. R. Sivakumar, **T. V. S. Sekhar** and T. V. R. Ravi kumar  
Suppression of flow-separation behind a bluff body.  
Proceedings of the 3<sup>rd</sup> Int. conference on Fluid mechanics and Fluid power during Dec.7-9, 2006 at  
**IIT Bombay** .
  18. **T. V. S. Sekhar**, R. Sivakumar and T. V. R. Ravi Kumar  
MHD flow around a cylinder at moderate Reynolds numbers  
Proceedings of 49<sup>th</sup> Congress of 'The Indian Society of Theoretical and Applied Mechanics' (ISTAM)  
**IIT Kharagpur** during Dec.27-30, 2004 held at N.I.T, Rourkela, pp: 198-204.
  19. **T. V. S. Sekhar**, R. Sivakumar, T.V.R. Ravi Kumar and Umamaheswara Rao.  
Conducting fluid flow over a sphere under low  $R_m$  approximation at high Reynolds numbers.  
Proceedings of 50<sup>th</sup> Congress of The Indian Society of Theoretical and Applied Mechanics' (ISTAM)  
**IIT Kharagpur** during Dec. 14-17, 2005 pp: 261-269.

20. **T. V. S. Sekhar** and T. V. R. Ravi Kumar  
Multigrid method and Navier-Stokes equations.  
Presented in Int. conference on Industrial Mathematics ICIM-2001 during August 12-14 (2001) at **IIT Madras**.
21. **T. V. S. Sekhar** and T. V. R. Ravi Kumar  
Multigrid method to flow past a cylinder.  
Presented in Int. conference on Industrial Mathematics ICIM-2001 during August 12-14 (2001) at **IIT Madras**.
22. M.Sairam, V.V. Chandran, **T. V. S. Sekhar**, R. Sivakumar and K. Subbarayudu  
Heat Transfer from a sphere at low moderate and High Reynolds numbers.  
Proceedings of The Indian Society of Theoretical and Applied Mechanics'  
(ISTAM) **IIT Kharagpur** during Dec. 14-17, 2007.

- 1 Name : S. VIMALA
- 2 Designation : SR. LECTURER
- 3 Date of Birth : 20.5.1968
- 4 Educational Qualification:



University	Degree	Year	Field of Specialization
Bhararthiar University, Coimbatore	B.Sc.	1988	Mathematics
Avinashilingam Deemed University, Coimbatore.	M.Sc.	1991	Mathematics
- do -	M.Phil.	1992	Mathematics

5. (a) Work Experience (starting from present position):

Organisation /Employer	Designation	Period
Pondicherry Engineering College	Senior Lecturer	18.02.2007 to till date
Pondicherry Engineering College	Lecturer	18.2.2002 to 17.02.2007
Amrita Institute of Technology & Science Coimbatore	Lecturer	18.5.1998 to 6.2.2002

5. (b) Research Experience: Nil

6. Area of Specializations: Fuzzy Topology

7. Subjects teaching at

Under Graduate Level: All Enggineering Mathematics papers

Post Graduate Level: Nil

8. Research Guidance: Nil

Master's Level

Ph.D.

9. Projects carried out: Nil

10. Patents: N.A.

11. Technology Transfer: N.A.

12. Research Publications:

No. of papers published in National journals	No. of papers published in International journals	Papers appeared in the Conference proceedings
Nil	Nil	Nil

13. No. of Books published with details : Nil

**DEPARTMENT OF MATHEMATICS**  
**PONDICHERRY ENGINEERING COLLEGE**

**EXECUTIVE SUMMARY**

Sl. No	Details about Faculty members and other information	For the Period 1985-2006 (June)
1.	Number of Faculty members	8
2.	No. of papers published in Refereed Journals by all Faculty members (after joining in PEC, Pondicherry )	40
3.	No. of papers published in the proceedings of the conferences	4
4.	No. of Conferences attended by the faculty	31
5.	No. of Refresher courses attended by all the faculty members (after joining in PEC, Pondicherry)	24
6.	No. of Ph.D. Scholars produced by the Department	1
7.	No. of students working for Ph.D. Degree (part-time) in the Department at present	3
8.	No. of Mathematics Books available in the college Library	2000 (approximately)
9.	No. of Mathematics Journals subscribed in the college Library	8 (3 Foreign and 5 Indian)
10.	Computing and Internet facilities	2 Personal Computers and 1 Printer

**PROFILE OF THE DEPARTMENT OF MATHEMATICS**  
**PONDICHERRY ENGINEERING COLLEGE**

The Department of Mathematics of Pondicherry Engineering College is offering courses in Mathematics to the students of B.Tech. (all branches), M.C.A., and M.Tech. (ECE, EEE and Energy Technology). The syllabi of these courses have been framed in consultation with the Engineering Departments, in order to meet their basic requirements.

The Department consists of eight faculty members (2 Professors, 1 Assistant Professor, 4 Senior Lecturers and 1 Lecturer) who are highly qualified. Apart from serving the basic requirements of the Engineering branches, the members of the Mathematics Faculty are involved seriously in research by publishing papers, guiding students for Ph.D. and participating in National and International Conferences. The department also has computing facilities with two personal computers and one printer in a separate room. The faculty members of the department are provided with internet facilities through the computers in the computer centre.

The Pondicherry University has recognized all the senior faculty members as research guides. The department itself is recognized to conduct Ph.D. (Part-time) programme. The details of the faculty members along with their qualifications and their respective areas of research interest are given below:

Sl No	Name of the faculty member	Qualifications	Present Position	Date of joining the college	Date of joining the present post	Areas of Interest
1.	V. Sitaramaiah	M.Sc., Ph.D.	Professor & Head	19.3.1987	28.6.1999	Theory of Numbers
2.	P.A. Padmanabham	M.Sc., Ph.D.	Professor	2.4.1987	12.10.1992	Special Functions
3.	R. Seker	M.Sc., M.Phil, Ph.D.	Assistant Professor	31.5.1985	28.6.1999	Fluid Mechanics
4.	J. Jayakumar	M.Sc., M.Phil, Ph.D.	Senior Lecturer	23.7.1996	23.7.2000	Numerical Analysis
5.	G. Ayyappan	M.Sc, M.Phil, Ph.D.	Senior Lecturer	10.7.1996	10.7.2000	Queuing Theory and Stochastic Processes

Sl No	Name of the faculty member	Qualifications	Present Position	Date of joining the college	Date of joining the present post	Areas of Interest
6.	S. Mangayarcassay	M.Sc., Ph.D.	Senior Lecturer	1.7.1999	1.7.2003	Commutative Algebra, Homological Theory
7.	T.V. Satya Sekhar	M.Sc., Ph.D.	Senior Lecturer	24.3.2000	24.3.2004	Computational Fluid Dynamics
8.	S. Vimala	M.Sc., M.Phil.	Lecturer	18.2.2002	18.2.2002	Fuzzy Topology

