RESUMÉ

Professor Satya Prakash
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Name: **SATYA PRAKASH**

Positions:

1. **Vice-Chancellor**
   Jwaji University, Gwalior (2002-2005)
2. **UGC Emeritus Fellow**
   Department of Physics, Panjab University,
   Chandigarh (2009-2011)
3. **Dean, Faculty of Science**
   Panjab University, Chandigarh (1999-2001)
4. **Professor and Chairman**
   Department of Physics, Panjab University,
   Chandigarh (2001-2002)
5. **Visiting Professor**
   University of Duisburg, Germany (2007)

Working Experience:

Research, Teaching and Administrative duties were carried out in the following Institutions:

In India:

1. University of Allahabad, Allahabad
2. University of Roorkee, Roorkee
3. Punjabi University, Patiala
4. Panjab University, Chandigarh
5. Jiwaji University, Gwalior

Abroad:

1. Faculty of Science, University of Paris XI, Orsay, France
2. Faculty of Science, University of Paris VI, Paris, France

3. Laboratoire de Physique des Solides, Ecole Superieure de Physique et Chimie Industrial, Paris, France.
4. Institute of Advanced Studies, Australian National University Canberra Australia
5. School of Low Temperature Physics, Gerhard-Mercator University, Duisburg, Germany

PERSONAL

- Born on May 30, 1941 in village Barauli , Mainpuri (Uttar Pradesh)
- High School with distinctions in Maths and Science and Intermediate with distinctions in Physics, Chemistry and Maths. (UP Board)
- B.Sc., Agra University with distinctions in Maths and Statistics, 1962.
- M.Sc., Allahabad University with specialization in X-rays, 1964.
- D.Phil., Allahabad University, 1970.
- Merit Scholarships IX to B.Sc. (UP Board), M.Sc. (Allahabad University)
- Awarded Junior, Senior, Post-Doc Fellowships (CSIR, DAE).
- Married, blessed with a son and a daughter, very well settled.

JOBS

- **Vice-Chancellor, Jiwaji University, Gwalior, (2002-05)**

  (As **Vice Chancellor of Jiwaji University, Gwalior (M.P.)** contributed to the multidimensional growth of the university in the terrain of Chambal Ghati. The then **Prime Minister of India, Shri Atal Bihari Vajpai remarked that "you have put the pen in the fingers of young hands that were ready to hold guns". The then President of India, Dr. A.P.J. Abdul Kalam remarked the university as "great institute").**

- Chairman, Department of Physics, Panjab University, Chandigarh, (2001-2002)

  (Contributed for better laboratory teaching and infrastructure for the students)

- **Dean, Faculty of Science, Panjab University, Chandigarh, (1999-2001).**

  (Strengthened research dynamics in the university)

- Worked for short durations in Research Institutes and Universities in USA, UK, France, Germany, Italy, Australia, Singapore, and Thailand.
- Visiting Professor, University of Duisburg, Germany, 1999, 2007
- Visiting Professor/Visiting Scientist, ESPCI and Université Paris VI for three months (1991, 1992, 1993, 1994 and 1996).
- Professor of Theoretical Solid State Physics, Panjab University, Chandigarh, (1987-2003)
- Research Fellow, Australian National University, Canberra (1984-86)

- Visiting Professor at Université Paris XI, Orsay (1981, 1982).
- Reader in Physics, Panjab University, Chandigarh, (1979-87)
- Chercheur Associe, CNRS, France (1976-78).
- Awarded Burse Joliot Curie, Orsay (France), 1975.
- Lecturer in Physics at Panjab University, Chandigarh, (1972-79)
- Lecturer in Physics at Punjabi University Patiala, 1971.

RESEARCH

Significant contributions are in **METAL PHYSICS** in the subjects of **Phonons, Magnetic Excitations, Metallic Solid Solutions, Hydrogen Diffusion,** C**uprate Superconductors** and **Nanophase semicunducting materials**.

Ph.D. theses:	16
Research Projects:	11
Research Publications:	215

Articles	**No.**	**Printed Pages**
Reviews:	5	172
Research Papers:		
Phys. Rev. B:	40	340
J. Phys. C and F:	14	140
Physica:	11	111
Phys. Letters A:	8	25
Nuovo Cimento:	4	68
Phys. Status Solidi:	6	65
Cand. J. Phys.:	5	40
Pramana:	14	124
Hyperfine Int, Cryst. Lattice Defects, J. Non-Cryst. Solids, Carbon, Int.J. Mod. Phys. J. Solid State Chem., J. Mag. Mag. Mater., Appl. Phys. A and other Int. Journals:	35	303
Physics Education	10	56
Total:	**152**	**1444**
Conf. Papers:	**63**	**115**
Grand Total:	**215**	**1559**

Books Authored:

1. Dynamics of Transition Metals and Alloys

(Nova Science Publishers Inc. New York, 1998)

(A scholarly contribution to the physics of transition metals)

2. Vision for Science Education
(Allied Publishers, New Delhi.2014)

(A deep concern about science teaching in the country and a vision for future generation)

3. Advances in Statistical Physics of Solids and Liquids
(John Wiley, New York, 1990)

4. **Disordered Materials**

(Narosa Pub., New Delhi, 2003)

Book in Preparation:

Hydrogen in Metals: A Quantum Impurity

OTHER ACADEMIC CONTRIBUTIONS:

- Developed Solid State Physics group at Panjab University, Chandigarh.
- Organized International Advanced School in Statistical Physics.
- Organized TPSC Conference and Refresher Courses.
- Worked on National Committee for NET.
- Worked as Core Committee Member of International and National Conferences.
- Worked as an expert in selection committees.
- Vice President, Indian Physics Association (IPA) (1997-99).
- Vice President, Indian Association of Physics Teachers (2001-07).
- Appointed as Chairman of the NAAC Committee for assessment and accreditation of Universities and Colleges.
- Organized 46th Department of Atomic Energy Solid State Physics Symposium 2003 in Jiwaji University, Gwalior, December 26-30, 2003.
- Nominated by UGC for General Council of NAAC for a period of three years from August 2004.
- **President, Indian Association of Physics Teachers, (2010-13)**

ACADEMIC DISTINCTIONS

- Invited to submit the proposals for "***THE NOBLE PRIZE OF PHYSICS 1997***".
- Member, National Academy of Sciences, India.
- Referee of Phys. Rev. Letters, Phys. Rev. and Pramana.
- Distinguished Leadership Award, American Biographical Inst.
- *The Men of Achievement* Award, Int. Biographical Center, London.
- Five Hundred Leaders of Influence Award, Int. Publications.
- Among 2000 Outstanding Intellectuals of 20th Century.

- Among 2000 Outstanding Scientists of 20th Century.
- The 20th Century Award of Achievements.
- Biography in Marque's Who's Who 2018
- Appointed to Research Board of Advisors, American Biographical Inst.
- **Offered Vice-chancellorship of Goa University, Goa**.
- **'Higher Education and Development Award'** by Higher Education and Development Summit (HEADS) Committee, New Delhi for outstanding contribution in the area of higher education. (April 16, 2004)
- **'Lifetime Achievement Award'** by ITDC, New Delhi on the occasion of International Trade Summit held on September 15, 2004.
- Nominated as "**Member in the Kendriya Hindi Samiti"** by Rajbhasha Vibhag, Govt. of India for a period of four years from its reconstitution (i.e.upto December 2008) which includes Hon'ble Prime Minister, Govt. of India as its Chairman and many distinguished personalities of the country as members.
- **UGC Emeritus Fellow,** Physics Department, Panjab University, Chandigarh
- **Chancellor Nominee,** Selection committees for Punjab state Universities

Membership of Professional Bodies

1. The National Academy of Sciences, India.
2. Indian Physics Association.
3. Indian Association of Physics Teachers.
4. Nuclear Science Centre Council, New Delhi (2003-5).
5. Member of the Executive Committee of Indian Red Cross Society, M.P. State Branch (2003-5).
6. Member of the Governing Body of Cancer Hospital and Research Institute, Gwalior (2003-5).
7. Member of the Governing Body of Atal Bihari Vajpayee Indian Institute of Technology & Management, Gwalior (2003-5).
8. Member of Exemption Committee of University Grants Commission (2003-5).
9. Member of the National Academic Planning Committee of the XXVIII Indian Social Science Congress (2003-5).
10. Member of the Steering Committee of M.P. SLET-2004.

SIGNIFICANT SCIENTIFIC CONTRIBUTIONS

1. Lattice Dynamics of Simple and d and f-band Metals

First principle theories of lattice dynamics of simple and transition metals are proposed. The effect of band structure and exchange and correlation interactions on the phonon frequencies is studied. New electron-ion model potentials are proposed. The generalized screened breathing shell model for the dynamics of transition metals is formulated. It is proved that the non-locality of electron-phonon interaction leads to the crossing of longitudinal and transverse phonon modes and the phonon anomalies are correlated with the band structure effects.

The monograph "*Dynamics of Transition Metals and Alloys*" is written and published by Nova Science Publishers Inc. New York in 1998.

2. Magnetic Excitations in Metals

The temperature dependence of dynamical magnetic susceptibility is investigated using nearly realistic band structure of transition metals. A complete general theory of dynamical spin and orbital susceptibilities is formulated and it is proved that the spin and orbital contributions are of the same order of magnitude in transition metals. The quasilocalized d-electrons are found responsible for the anomalous behavior of magnetic susceptibility.

3. Electronic Properties of Metallic Solid Solutions

Pseudo Green's function theory is proposed to obtain an exact expression for the change in electron density of states due to an impurity. The bound and virtual bound states are predicted in dilute alloys with narrow d-bands. Pseudo potential theory is proposed to study the charge perturbation due to impurities in transition metals. The concept of pseudo vacancy is introduced.

A unified theory of Electric Field Gradients (EFG) in binary metallic alloys is proposed. The valence and size EFGs are generated using crystal potentials of the perfect and imperfect lattices. The anisotropy of strain field is studied by inverting the full dielectric matrix in the linear combination of atomic orbital representation and using density functional theory. The local field effects are found significant in transition metals. The effect of exchange and correlation interactions is included in the non-linear screening theory. The experimental results for Knight Shift, Heat of Solution and EFGs of transitional and non-transitional dilute alloys are explained.

4. Hydrogen Diffusion in Metals

The configurational and activation energies of proton are investigated in the framework of many body theories in the simple and transition metals and it is shown that hydrogen is most stable in the octahedral position in the fcc and hcp lattices and in the tetrahedral position in the bcc lattice.

Using non-linear screening theory it is shown that the size effect does not allow the formation of bound state of proton and lattice relaxation contributes significantly to the heat of solution. A unified quantum theory of atomic diffusion in solids is proposed for both the localized and delocalized impurities. The impurity state is taken in the form of wave packet constructed out of its Bloch states in the host lattice and its time evolution is studied including its interaction with the host lattice phonons. Theory is extended for concentrated metal hydrides and acoustic and optical phonon assisted hydrogen diffusion is studied. The anomalous isotope effect in hydrogen diffusion in fcc metals is explaine

5.Cuprate Superconductors

The anisotropy of gap parameter in cuprate superconductors is explained in the framework of BCS theory using two-dimensional itinerant model of conduction electrons and holes. It is shown that the hydrogen is in the protonic state in 123 compounds and it is stable in the off-symmetric interstitial sites in CuO planes.

6. Nanophase and Semiconducting Materials

The phonon spectra of nanoclusters of Cu, Ni and Ag are studied using molecular dynamics by adopting embedded atom model potential. The pressure variation at the surface is critical and capillary pressure is found in the core region. The clusters are suppressed to create nanoparticle and their porosity is studied. In the vibrational spectra it is found that the surface modes dominate.

The strained structure and VDOS of 3nm size TiO2 nanoparticles obtained by MD simulation may be useful for experimental study.

The density functional tight binding method is used to study the hydrogenated atmosphere silicon of 216 silicon atoms and 26 hydrogen atoms. The experimental results of phonon spectra are explained and Raman peak at low frequency is also found. The band gap increases in the hydrogenated silicon as compared to pure silicon. The spin polarized density functional study is carried out for hetrofullerene and metallofullerene clusters, binary graphite 3d-transition metal intercalated compounds (XC_6 X=Cr, Mn and Fe) and half metallic ferromagnetism in Zn(1-x)V(x)Se, Zn(1-x)Fe(x)Se, Zn(1-x)Co(x)Se and V at Se and interstitial sites in ZnSe. The antiferromagnetc phase with V at edge interstitial sites in ZnSe is most stable.

The free energy barrier hoping model is formulated to explain Meyer – Neldel rule and dc and ac conductivities of chalcogenide glasses.

7. Physics Education

A deep concern about science teaching in the country and a vision for future generation is presented in the volume " **Vision for Science Education"** (Allied Publishers,New Delhi,2014)

LIST OF PUBLICATIONS (*Professor Satya Prakash*)

Books Authored

1. **Dynamics of Transition Metals and Alloys**

   (Nova Science Publishers Inc. New York, 1998).

2. **Vision for Science Education (Allied Publishers, New Delhi,**. 2014)

3. **Advances in Statistical Physics of Solids and Liquids**

   (John Wiley, New York, Wiley Eastern, New Delhi, 1990)

4. **Disordered Materials** (Narosa Publications, New Delhi, 2003)

5. **Hydrogen in Metals: A Quantum Impurity** (in preparation)

Review Papers

1. Models and microscopic theories of lattice dynamics of metals, in "Current Trends in Lattice Dynamics" Ed. K.R. Rao, 1979, pp. 197-293, 400 references (Satya Prakash).
2. Electric field gradients in cubic alloys, Hyperfine Interactions, 24, 491-519 (1985) (S. Prakash)
3. Atomic diffusion in solids, in "Advances in Statistical Physics of Solids and Liquids" (Eds. S. Prakash and K.N. Pathak, John Wiley and Wiley Eastern Ltd. 1990) pp. 55-72 (S. Prakash).
4. Structure and Vibrational Properties of Nanoparticles in "Disordered Materials" (Narosa Pub., New Delhi, 2002)p133-162(S. Prakash, Ranber Singh and P. Entel).
5. Quantum Theory of Diffusion (in preparation) (S. Prakash).

Original Research Papers

I. Lattice Dynamics of Simple Metals

6. Force constants of sodium, Phys. Rev. 140, A1754-A1758 (1965) (Satya Prakash and S.K. Joshi)
7. Lattice dynamics of Aluminum, Physica 34, 155-160 (1967), (Satya Prakash and S.K. Joshi)
8. Comparison of dielectric screening methods used in phonon frequency calculations of normal metals, Phys. Rev. 185, 913-923 (1969) (Satya Prakash and S.K. Joshi)
9. Phonon frequencies of alkali metals, Phys. Rev. 187, 808-820 (1969), (Satya Prakash and S.K. Joshi)
10. Phonon frequencies of hexagonal meals, Be, Mg and Zn, Phys. Rev. B1, 1468-1478 (1970), (Satya Prakash and S.K. Joshi)
11. Intercomparison of dielectric screening methods used in phonon frequency calculations of normal metals, Proc. Nat. Inst. of Scienc35A, 852-857 (1969), (Satya Prakash and S.K. Joshi)

12. Grüneisen parameter of Aluminum Physica 47, 452-457 (1970), (Satya Prakash and S.K. Joshi)

13. Phonon dispersion in alkali metals I, Physica 50, 10-14 (1970) (S.N. Singh and S. Prakash)

14. Phonon frequencies of alkali metals II, Physica 58, 71-76 (1972) (S.N. Singh and S. Prakash)

15. The determination of the crystal potential for a calculation of phonon frequencies of normal metals, Phys. Letters, 30A, 123-124 (1969) (Satya Prakash and S.K. Joshi).

II.Dielectric Screening and Lattice Dynamics of d- and f-band Metals

16. Non-interacting band model for dielectric screening in transition metals-Application to paramagnetic nickel, Phys. Rev. B2, 915-927 (1970) (Satya Prakash and S.K. Joshi).

17. Lattice dynamics of transition metals - Application to paramagnetic nickel, Phys. Rev. B4, 1770-1778 (1971), (Satya Prakash and S.K. Joshi).

18. Lattice dynamics of noble metals - Application to copper, Phys. Rev. B5, 2880-2887 (1972), (Satya Prakash and S.K. Joshi).

19. Phonon frequencies and cohesive energies of Copper, Silver and Gold, Phys. Rev. B8, 5532-5544 (1973), (Natthi Singh and Satya Prakash).

20. Phonon frequencies of Gold. Phys. Rev. B10, 2652-2653 (1974), (Natthi Singh and Satya Prakash).

21. Non-interacting spin band model for dielectric screening and local field corrections in ferromagnetic nickel, Phys. Rev. B12, 1076-1083 (1975) (Natthi Singh, Joginder Singh and Satya Prakash).

22. Lattice dynamics of nickel, Phys. Rev. B12, 5415-5422 (1975), (Natthi Singh, Joginder Singh & Satya Prakash).

23. Non-interacting band model for dielectric screening and local field corrections in bcc transition metals: Application to paramagnetic Cr, Phys. Rev. B12, 3159-3165 (1975) (Joginder Singh, Natthi Singh and Satya Prakash).

24. Phonon frequencies of noble metals, Phys. Rev., B12, 1600-1602 (1975) (Natthi Singh and Satya Prakash).

25. Phonon frequencies of paramagnetic Chromium, Phys. Rev. B12, 3166-3173 (1975), (Joginder Singh, Natthi Singh and Satya Prakash).

26. Phonon dispersion in scandium and yttrium, Phys. Letters, 53A, 164-166 (1975), (J. Singh and S. Prakash).

27. Form factor of nickel, Phys. Letters, 58A, 59-60 (1976) (J. Singh, N. Singh and S. Prakash).

28. Form factors of copper and nickel, Phys. Letters, 37A, 177-178 (1977) (S. Prakash).

29. Dielectric screening and lattice dynamics of hcp transition metals, Sc and Y, Nuovo Cimento, 37B, 131-154 (1977) (J. Singh and S. Prakash).

30. Phonon dispersion in hcp metals, Physica 90B, 223-236 (1977) (J. Singh, R. Singh and S. Prakash).

31. Kohn anomalies and phonon dispersion in transition metals, in "Lattice Dynamics" (Ed. M. Balkanski, Flammarion Sciences, Paris, 1977) p30-33 (S. Prakash).

32. Dielectric screening and phonon frequencies of Paladium, Platinum and Vanadium, Phys. Rev. B18, 2954-2960 (1979) (Joginder Singh, Natthi Singh and Satya Prakash).

33. Dielectric matrix using non-local model potential approach, J. Phys. F11, 2409-2416 (1981) (Joginder Singh and Satya Prakash).

III. Magnetic Excitations in Metals

34. A model calculation of susceptibility function of paramagnetic nickel, Physica, 78, 273-290 (1974), (Satya Prakash and Natthi Singh).

35. Model calculation of dynamical spin susceptibility of paramagnetic nickel, Phys. Rev. B15, 5412-5420 (1977) (Ramjit Singh and Satya Prakash).

36. Dynamical spin susceptibility of ferromagnetic nickel, Phys. Rev. B16, 4012-4019 (1977) (Ramjit Singh, Joginder Singh and Satya Prakash).

37. Model potential theory of dynamical susceptibility of metals: Application to Vanadium, Copper and Aluminium, J. Phys. F10, 1231-1248 (1980) (Ramjit Singh, Satya Prakash and Joginder Singh).

38. Magnetic susceptibility of noble metals, J. Phys. F10, 1249-1252 (1980) (Ramjit Singh, S. Prakash and Joginder Singh).

39. Dynamical spin susceptibility of 3d, 4d and 5d transition metals, Phys. Stat. Solidi (b) 103, K65-K69 (1981) (Ramjit Singh, S. Prakash and J. Singh).

40. Temperature dependence of dynamical spin susceptibility of transition metals, Phys. Rev. B23, 2357-2366 (1981) (Ramjit Singh, S. Prakash and Joginder Singh).

IV. Electronic Properties of Metallic Solid Solutions

41. Residual resistivity of noble metals, Phys. Stat. Solidi (b) 79, 787-794 (1977) (N. Singh, J. Singh and S. Prakash).

42. Interatomic potential for copper, Phys. Rev. B17, 1700-1706 (1978), (Satya Prakash and P. Lucasson).

43. Theory of charge perturbation due to impurities in transition metals, J. Phys. F8, 2497-2509 (1978) (S. Prakash).

44. Capture radii of impurities in Aluminium, Crystal Lattice Defects, 8, 111-112 (1979) (S. Prakash & P. Lucasson).

45. Size effect, valency factor and point defect interactions in dilute alloys, Phys. Stat. Solidi (b) 91, 339-347 (1979), (S. Prakash and P. Lucasson).

46. Point defects-impurity interactions in copper, J. Phys. F11, 2515-2524 (1981) (S. Prakash and P. Lucasson).

47. Pseudo Green's function theory for dilute alloys of d-band metals, Nuovo Cimento, 1D, 235-256 (1982) (J. Singh, S.D. Raj and S. Prakash).

48. Electric field gradient in dilute alloys of copper, Phys. Rev. B26, 736-742 (1982) (S.D. Raj, J. Singh and S. Prakash).

49. Electric field gradient in copper alloys, J. Phys. F12, 1941-1957 (1982) (S.D. Raj, J. Singh and S. Prakash).

50. Electric field gradient in dilute alloys of Aluminium, Phys. Rev. B27, 2241-2247 (1983) (S.D. Raj, J. Singh and S. Prakash).

51. Electronic structure of impurities in dilute alloys of A1, Phys. Stat. Solidi (b) 119, 381-389 (1983) (S. Mahajan and S. Prakash).

52. EFG in dilute transitional alloys of Cu and A1, Cand. J. Phys. 61, 1064-1072 (1983) (B. Pal, S.D. Raj, S. Prakash and J. Singh).

53. Electronic structure of hydrogen and muonium in simple metals, Nuovo Cimento 2D 883-897 (1983) (S. Mahajan and S. Prakash).

54. Electric field gradients in non-magnetic dilute alloys of Aluminium and Copper, Phys. Rev. B30, 3191-3202 (1984) (B. Pal, S. Mahajan, S.D. Raj, J. Singh and S. Prakash).

55. Electronic structure of CuNi, CuCo, and AgNi alloys, Nuovo Cimento 4D, 469-475 (1984) (J. Singh, S.D. Raj and S. Prakash).

56. Electric field gradients in dilute transitional alloys of copper, Phys. Letters 107A, 129-132 (1985) (J. Singh, S.K. Rattan and S. Prakash).

57. Electric field gradient for non-transitional dilute alloys of Aluminium, Cand. J. Phys. 63, 498-506 (1985) (S.D. Raj, S. Prakash and J. Singh).

58. Electric field gradient in dilute bcc alloys: Application to Vanadium alloys, Phys. Stat. Solidi (b) 129, 301-312 (1985) (B. Pal, J. Singh, S.D. Raj and S. Prakash).

59. Electric field gradient in non-transitional dilute alloys of Aluminium, Physica 132B, 61-66 (1985) (S. Mahajan, B. Pal and S. Prakash).

60. Electric field gradient for muonium and monovacancies in Cu and Al, Physica 133B, 210-221 (1985) (B. Pal, S. Mahajan and S. Prakash).

61. Electric field gradient for interstitial positive muons in fcc metals, An abinitio calculation of size effect, Phys. Letters 109A, 397-400 (1985) (B. Pal, S. Mahajan and S. Prakash).

62. Electric field gradient in dilute vanadium alloys. Phys. Letters 114A, 279-283 (1986) (S.K. Rattan, S. Prakash and J. Singh).

63. Electric field gradient for simple metal impurities in Ag and Au, Physica 141B, 203-212 (1986) (B. Pal, S.K. Rattan, J. Singh and S. Prakash).

64. Electronic structure of interstitial hydrogen in Zr, Pramana- J. Phys. 26, 143-150 (1986) (N. Singh, S.P. Singh, S. Mahajan, V.K. Jindal and S. Prakash).

65. Calculation of electric field gradient in transitional and non-transitional dilute cubic alloys, Physica 144B, 368-375 (1987) (J. Singh, S.K. Rattan, B. Pal and S. Prakash).

66. Electric field gradient in transitional dilute alloys, Hyperfine Interactions, 35, 685-689 (1987) (J. Singh, S.K. Rattan and S. Prakash).

67. Electronic structure of dilute cubic transitional alloys, in "Advances in Statistical Physics of Solids and Liquids" (Eds. S. Prakash and K.N. Pathak, John Wiley Ltd., 1990) pp 230-243 (J. Singh, S.K. Rattan and S. Prakash).

68. Local field effects in the electric field gradients of dilute transition metal alloys, Phys. Rev. B38, 10440-10446 (1988) (J. Singh, S.K. Rattan and S. Prakash).

69. Strain field due to point defects in metals, Phys. Rev. B47, 599-606 (1993), (S.K. Rattan, P. Singh, S. Prakash and J. Singh).

70. Theory of electric field gradient in dilute alloys, Phys. Rev. B48, 6927-6936, (1993), (S. Prakash, S.K. Rattan and J. Singh).

71. Electronic structure of hydrogen and munioum in Al, Mg and Cu, Pramana, 41, 239-255 (1993) (Pawan Singh and S.Prakash)

72. Strain field due to substitutional transition metal impurities in bcc metals: Application to vanadium alloys, Phys. Rev. B49, 932-943 (1994), (J. Singh, Pawan Singh, S.K. Rattan and S. Prakash)

73. Electronic structure of impurities in dilute alloys of Cu, Phys. Rev. B49,2335-2343(1994) (P. Singh, S.K. Rattan, J. Singh & S. Prakash).

74. Electronic structure of non-magnetic impurities in dilute alloys of Al, Pramana 42, 405-420 (1994) (P. Singh and S. Prakash).

75. Electric field gradient in dilute Vanadium-based alloys, Phys. Rev. B49, 12259-12261 (1994) (Pawan Singh, S. Prakash and J. Singh).

76. Strain field and EFG in dilute alloys, Material Science forum V.223-224, 193-198 (1996) (Pawan Singh and S. Prakash).

77. Strain field in dilute alloys, Bull. Mater. Sci. 20, 591-596 (1997) (Pawan Singh and S. Prakash).

78. Nonuniform displacements in dilute alloys of Al and Cu, Phys. Rev. B59, 14226-14234 (1999) (P. Singh and S. Prakash).

79. Theory of strain field and electric field gradients in dilute alloys, in "Condensed Matter Physics" Eds. B.K. Agarwal and H. Prakash (Narosa, New Delhi) p. 142-145 (1999) (S. Prakash).

80. Dynamic expansion and rupture of metal cylinders under explosive loading, (Proc. ASME Conference on "Structure Under Extreme Loading Conditions", Washington, 2000). (Manjit Singh, M.S. Bola and S. Prakash).

81. Determination of dynamic tensile strength of metals from jet break-up studies. (Proc. 19th International Symposium on Ballistics, Interlaken, Switzerland) (May 7-11, 2001) page 827-833 (M. Singh, M.S. Bola and S. Prakash).

82. Dynamic tensile deformation and fracture of metal cylinders at high strain rate, Internal Journal of Impact Engineering, 27,939-54 (2002). (M. Singh, H.R. Suneja, M.S. Bola and S. Prakash).

83. Electric field gradients in dilute alloys of Al, in "Disordered Materials" (Narosa Pub.,New Delhi 2002) (P. Singh and S. Prakash).

84. Atomic displacements in dilute alloys of Cr, Nb and Mo: Journal of Physics: Pramana; 59, 497-514 (2002) (H. Sharma and S. Prakash).

85. Strain field due to point defects in Ni dilute alloys. Prog. in crystal growth and characterization of Material; P. 195-199 (2002) (H. Sharma and S. Prakash)

86. Strain field due to transition metal impurities in Ni and Pd, Journal of Physics: Pramana; 60, 123-141 (2 003) (H. Sharma and S. Prakash).

87. Strain field due to self-interstitial impurity in Ni, Pramana; 60, 159-166 (2003) (H. Sharma and S. Prakash).

88. Atomic displacements due to point defects in Ni dilute alloys, International Journal of Modern Physics-B 17, 1-12 (2003) (H. Sharma and S. Prakash).

89. Strain field due to transition metal impurities in Cu., Chinese Journal of Physics, 41, 2 (2003) (H. Sharma and S. Prakash).

90. Strain field due to transition metal impurities in Fe, Cand. J. Phys. 81 (2003) (H. Sharma and S. Prakash)

91. Strain field due to transition metal impurities in Cr, in “Disordered Materials” (Narosa Pub. New Delhi, 2003) p. 117-120 (H. Sharma and S. Prakash).

92. Electric field gradient in dilute alloys of Al, in “Disordered Materials” (Narosa Pub. New Delhi, 2003) p. 102-111 (P.Singh and S. Prakash).

93. Atomic displacements in bcc dilute alloys. Pramana J. Phys. 68, 655-677(2007) (H. Sharma and S. Prakash).

V. Hydrogen Diffusion in Metals

94. Activation energy of proton in copper, Phys. Letters, 61A, 405-407 (1977) (Satya Prakash).

95. Proton diffusion in noble metals, Phys. Rev. B18, 3980-3987 (1978) (Satya Prakash).

96. Proton movement in fcc, bcc and hcp metals, Phys. Rev. B19, 1976-1981 (1979) (S. Prakash, J. Bonnet and P. Lucasson).

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