**Subject Index**

**General**

Highlights from the Observatories, Compiled by *(Saikia D.J.)*, 35

Society Matters, 49


About the Proceedings, 71

Foreword by *(Rao U.R.)*, 73

Proceedings of the 23rd Meeting of the ASI, *(Subramanian K. and Saikia D.J.)*, 283

Foreword, 295

Erratum : Mass function study of six open clusters Be 10, Be 67, To 5, Be 15, Be 71 and King 1 *(Lata S.)*, 417

Society Matters, 419

**Invited Review**

Fractal analysis of galaxy surveys, *(Seshadri T.R.)*, 1

**Thesis Summary**

Hard X-ray and soft gamma ray properties of cosmic sources, *(Choudhury M.)*, 303

Analytical studies of standing shocks in accretion flows around compact objects, *(Das S.)*, 307

Near infrared photometry of the young clusters NGC 1960, NGC 2453 and NGC 2384, *(Hasan P.)*, 311

Studies of chemically peculiar stars, *(Joshi S.)*, 317

Solar coronal rotation and phase of solar activity cycle, *(Mehta M.)*, 323

Star formation : circumstellar environment around Young Stellar Objects, *(Puravankara M.)*, 327

Evolution of magnetic fields in the solar atmosphere, *(Ravindra B.)*, 333
Archeoastronomy
Aspects of prehistoric astronomy in India, (Rao N.K.), 499

Physical Data and Processes
Pseudo-potential approach for astrophysical fluid dynamics study (Mondal S., Samanta S. and Chakrabarti S.K.), 367
PAHs incorporating cyclopentadienyl ring and their astrophysical relevance, (Srivastava A., Pathak A. and Rastogi S.), 367
Vibrational spectra of PAHs and the astrophysical IR bands, (Pathak A. and Rastogi S.), 367
Production of Nitric oxide (NO) in hot molecular core SgrB_2(M) (Saxena P.P.), 367
Anomalous absorption in formaldehyde in cosmic objects, (Chandra S., Musrif P.G. and Dharmkare R.M.), 367
The non-linear theory of a warped accretion disc with the $\beta$-viscosity prescription, (Ghanbari J., Shadmehri M. and Salehi F.), 447
Recombination efficiency of molecular hydrogen on interstellar grains and its effect on production of $H_2$, (Acharyya K., Chakrabarti S.K.), 473

Astronomical Instrumentation, Methods and Techniques
The telescope control system at Mt. Abu infrared observatory, (Shah R.R., Jog N.S., Subhedar D.V., Bobra A.D., Rangooni H.T., Mathur S.N., Patwal P.S., Rajpurohit G.S. and Jain J.K.), 237
Radio astronomical imaging and phase information, (Singal A.K.), 245
ASTROSAT observations : complementary studies from ground, (Sreekumar P.), 253
Atmospheric soundings from Mount Abu, (Sharma S. and Sinha H.S.), 259
Imaging with insolated mirrors, (P. Venkatakrishnan, R. Sridharan and S.K. Gupta), 265
New opportunities for Indian space astronomy, (Tandon S.N.), 297
The Indian multiwavelength astronomy satellite ASTROSAT, (Agrawal P.C.), 351
Future spacebased IR spectrometer, (Ghosh S.K.), 351
Virtual observatory capabilities, (Kembhavi A.K. and Gupchup J.), 351
Preparing for new UV space missions at IIA, (Mohan R.), 351

One-meter class optical telescope for early and fast observations of GRB afterglows, (Sagar R.), 351

Experiments and design activities for the multi application solar telescope, (Venkatakrishnan P.), 351

On observational detection limits in asteroseismology: a comparison between Manora Peak and Devasthal, (Mary D.), 367

Atmospheric extinction at the Indian Astronomical Observatory, Hanle and at the Vainu Bappu Observatory, Kavalur, (Sujatha S., Sriraghavan S.M., Jayakumar K. and Babu G.S.D.), 367

An estimate of the iron group of nuclei in primary cosmic ray flux at energies \(\sim 10^{15} \text{ eV}\), (Morris S.D.), 367

A search for antiprotons in cosmic ray flux at TeV energies, (Tonwar S.C.), 367

Threshold energy estimates of the proposed MACE gamma-ray telescope at Hanle, (Sapru M.L., Tickoo A.K., Thoudam S., Rannot R.C. and Koul R.), 408

Angular resolution of the GRAPES-3 array for UHE gamma-ray astronomy, (Mohanty P.K.), 408

Methods to study the darkcount rate and spatial resolution of the ICCD, (Rajan G., Murthy J. and Prasad B.R.), 408

Study of modulation and demodulation schemes for a two beam polarimeter, (Nagaraju K., Sankarasubramanian K., Ramesh K.B. and Rangarajan K.E.), 408

A two-beam spectropolarimeter for Kodaikanal Tower Telescope, (Ramesh K.B., Nagaraju K., Rangarajan K.E., Sankarasubramanian K. and Singh J.), 408

A non planar trapezoidal structure for broad band applications in radio astronomy, (Raghunathan A. and Shankar N.U.), 408

Modal analysis and surface metrology of the RRI 12m preloaded parabolic dish, (Chelvan R.D., Modgekar M.O., Ateequlla C.M. and Shankar N.U.), 408

Design of a control system for the RRI 12m radio telescope, (Rishin P.V., Syed S.H., Aruna J., Shankar N.U., and Krishnan A.), 408

Comparison of FPGA-based spectrometers using conventional Fourier transform and number theoretic transforms, (Shankar N.U., Girish B.S., Srivani K.S. and Manjunath K.S.), 408

Phase diversity technique for high resolution solar imaging, (Bayanna A.R., Sridharan R. and Venkatakrishnan P.), 408
Preliminary results on the calibration and control of an adaptive optics system, (Kumar B., Sridharan R., Bayanna A.R. and Venkatakrishnan P.), 408

Redesigning ARIES Baker-Nunn camera for wide field CCD imaging, (Gupta K.G., Yadav R.K.S., Bangia T., Kumar T.S. and Sharma N.), 408

An image stabilization system for solar observations, (Sridharan R., Bayanna A.R., Kumar B., Venkatakrishnan P. and Keller C.U.), 408

Imaging with insolated mirrors, (Venkatakrishnan P., Sridharan R. and Gupta S.K.), 408

Study of polarization and temporal properties of atmospheric Cerenkov light : simulations, (Rannot R.C., Tickoo A.K., Dumora D., Procureur J. and Koul R.), 408

Exposure time calculator for IFOSC and sky background estimation (Pavan Chakraborty, Das H.K. and Tandon S.N.), 513

General Relativity and Cosmology

CMBR anisotropies : from WMAP to Planck, (Sethi S.), 349

CMB polarization, (Seshadri T.R.), 349

Probing dark energy, (Saini T.D.), 349

Does the fine-structure constant vary ?, (Chand H., Srianand R., Petitjean P. and Aracil B.), 349

Pseudo-Kerr geometry, (Samanta S., Mondal S. and Chakrabarti S.K.), 367

Gravitational wave emission from black holes surrounded by massive disks, (Basu P. and Chakrabarti S.K.), 367

Reionization of the universe, (Samui S., Srianand R. and Subramanian K.), 396

The Sun and Solar System

Studies on Hα and SXR flares in relation to Type III metric bursts, (Das T.K., Sarkar H. and Manna A.), 11

Period-brightness relationship in chromospheric bright points, (Kariyappa R., Narayana A.S. and Damé L.), 19

Mass limit on Nemesis, (Bhalerao V. and Vahia M.N.), 27

Lunar occultations in the near infrared : achievements and new challenges, (Chandrasekhar T.), 87
Polarimetric study of comets from Mt. Abu observatory, (Joshi U.C., Ganesh S. and Baliyan K.S.), 225

Infrared spectroscopy of Jovian aurorae, (George K. and Chandrasekhar T.), 233

Coronal heating efficiency for resonant (A.C.) and non-resonant (D.C.) mechanisms, (Chandra S., Musrif P.G. and Prasad L.), 275

3-d structure of sunspots, (Matthew S.K.), 337

Is the chromosphere always hot, or mostly cold?, (Kalkofen W.), 337

Dynamics of the magnetized solar atmosphere, (Hasan S.S.), 337

Transition region dynamics, (Banerjee D.), 337

Imaging solar coronal mass ejections from Sun to 1 AU: predicting their arrivals at earth, (Manoharan P.K.), 337

Statistical study of Hα flares during the current solar cycle, (Joshi B., Pant P. and Manoharan P.K.), 354

Colour and correlation analysis of shadow-bands observed during total solar eclipse of 23 November 2003 at the Indian Antarctic Station, Maitri, (Vats H.O.), 354

Relationship between speed of CME and GOES X-ray peak flux, (Ravindra B.), 354

On the correlation between He II 304 Å and He I 10830 Å network cells, (Ravindra B), 354

A study of the effect of flare on acoustic oscillations using wavelet analysis, (Ravindra B. and Kumar B.), 354


Hα in Jovian aurorae, (George K. and Chandrasekhar T.), 354

MST radar observations of Perseid meteor shower 2004, (Reddy K.C., Kumar D.V.P. and Yellaiah G.), 354

Contribution functions for stokes vector profiles, (Nagaraju K. and Rangarajan K.E.), 354

Spectrophotometric study of the comet C/2001 Q4 (NEAT), (Singh M., Kumar B. and Sanwal B.B.), 354

Solar rotation and geomagnetic field variability: low solar activity periods, (Gupta V. and Badruddin), 354

Solar wind plasma and field variations during solar wind streams and their role in modulating geomagnetic activity, (Singh M., Singh Y.P., and Badruddin), 354
Spectral characterization of solar active region NOAA 8242 in quiet and sunspot locations, (Janve V.A. and Ambastha A.), 354

Some aspects of the solar core magnetic field, (Hiremath K.M. and Krishna K.V.R.), 354

Anisotropy of solar wind density turbulence caused by the transients, (Manoharan P.K.), 354

Study of properties of coronal mass ejections from AR 9393 and AR 9415 (Manoharan P.K.), 354

How similar are starspots to sunspots? (Rajaguru S.P., Kurucz R.L. and Hasan S.S.), 354

Complex variations in line-intensity ratio of coronal emission lines with height above the limb, (Singh J., Sakurai T., Ichimoto K. and Watanabe T.), 354

Solar wind effects on cosmic ray modulation at 1 AU, (Shrivastava P.K.), 354

Spectral properties of two electron ions of astrophysical interest under strongly coupled plasma, (Sil A.N. and Mukherjee P.K.), 354

Magnetic evolution of super-active region NOAA AR 10486 and the large 4B/X17.2 class flare observed during October 28, 2003, (Ambastha A.), 354

Contribution of solar chromospheric features to UV irradiance variability, (Kariyappa R., Hiremath K.M. and Dame L.), 354

Variability of CaII K emission flux over the solar cycle, (Kariyappa R., Sivaraman K.R.), 354

Extreme level solar activity during decay phase of solar cycle 23 in October-November 2003, (Uddin W., Chandra R., Joshi B. and Ali S.S.), 354

Preliminary results of Venus transit of June 8, 2004 observed in Hα 6563 Å, (Ravindra B., Ambastha A., and Gosain S.), 354

Effects of coronal mass ejection associated with eruptive flares of the Sun, (Rahman A.M., Umapathy S.), 354

Brightness variations in comet Hyakutake (C/1996 B2), (Goraya P.S. and Singh R.), 354

Stars

Mass function study of six open clusters Be 10, Be 67, To 5, Be 15, Be 71 and King 1, (Lata S.), 51

Infrared study of the first identified helium nova V445 Puppis, (Ashok N.M.), 75

Studies of the peculiar nova V 4332 Srg, (Banerjee D.P.K.), 81

Evidence of asymmetry in Mira variable U Ori, (Mondal S.), 97
Interpretation of angular diameter measurements of Mira variables: role of water, (Tej A., Lançon A. and Scholz M.), 103

A recent multi-wavelength campaign to observe the microquasar SS 433, (Chakrabarti S.K.), 109

Imaging Fabry-Perot spectrometric studies of velocity fields in gaseous nebulae, (Anandarao B.G.), 117

Near infrared photometry of the young clusters NGC 1960, NGC 2453 and NGC 2384, (Hasan P), 151

Probing circumstellar dust formation through high resolution spectroscopy, (Rao N.K.), 159

A near-IR stellar spectral library in the H band using the Mt. Abu telescope, (Gupta R., Ashok N.M., Singh H.P. and Ranade A.C.), 175

Infrared studies of novae, (Ashok N.M.), 340

Brown dwarfs: the missing link between stars and planets, (Sengupta S.), 340

Cygnus X-3: a phenomenological perspective (Choudhury M.), 340

Wide field multi-object cluster spectroscopy (Kumar B.), 340

Planetary transits: a first direct view of extrasolar planets (des Etangs A.L.), 340

The effect of non-thermal protons on the high energy spectra of black hole binaries, (Misra R.), 340

Pulsar studies with GMRT: some recent results, (Gupta Y.), 345


Radio studies of supernovae, (Chandra P., Ray A. and Bhatnagar S.), 345

The magnetic field in the Milky Way, (Mitra D.), 345

Observation of R-band variability of L dwarfs, (Maiti M., Sengupta S., Parihar P.S. and Anupama G.C.), 367

Long-term spot activity variation in FK Comae Berenices, (Barway S., Pandey S.K. and Chaware L.), 367

Evolution of emission line activity in intermediate mass young stars, (Manoj P., Bhatt H.C. and Maheswar G.), 367

Angular diameters and effective temperatures of 19 evolved stars by lunar occultations, (Mondal S., Chandrasekhar T. and Kikani P.K.), 367

Discovery of pulsations in Am star HD 25515, (Chaubey U.S. and Kumar N.S.), 367

Study of young open cluster NGC 1624 (OC1 403, Cr 53), (Sujatha S., Sriraghavan S.M. and Babu G.S.D.), 367

HD 81032 : a newly discovered RSCVn binary, (Pandey J.C., Singh K.P., Sagar R. and Drake S.A.), 367

On the behaviour of chemically peculiar star HR 2095, (Sriraghavan S.M., Jayakumar K., Babu G.S.D. and Sujatha S.), 367

Li-rich K giants : a few new cases, (Reddy B.E. and Lambert D.L.), 367

FIP effect in RV Tauri stars, (Rao K. and Reddy B.E.), 367

X-ray spectroscopy of AM Her, (Girish V., Rana V.R. and Singh K.P.), 367

Chandra HETG observations of intermediate polars, (Rana V.R., Singh K.P., Schlegel E.M. and Barrett P.E.), 367

Near infrared analysis of nearby main sequence stars, (Kalyani N.), 367

Search for variable stars in intermediate and old age open clusters, (Durgapal A.K., Pandey A.K. and Pandey J.C.), 367

CCD photometric study of the open cluster NGC 6611, (Joshi Y.C., Pandey A.K. and Ogura K.), 367

Mass function study of six open clusters Be 10, Be 67, To 5, Be 15, Be 71 and King 1, (Lata S. and Sagar R.), 367

Wide field CCD photometry of open clusters, (Saurabh, Pandey A.K., Ogura K., Mito H., Tarusava K., Aoki T. and Sagar R.), 367

Study of emission line stars in young open clusters using slit-less spectra : NGC 663, (Subramaniam A., Bhatt B.C. and Ramya S.), 367

NGC 146 : a young open cluster with different ages for the low and high mass stars, (Subramaniam A., Sahu D.K., Sagar R. and Vijiitha P.), 367

Wide field CCD photometry around open cluster NGC 1912, (Pandey A.K., Upadhyay K., Ogura K., Mito H. and Sagar R.), 367

Incidence of planetary nebulae in star clusters, (Baliga K.J. and Mallik D.C.V.), 367

Chandra X-ray observations of SN 1995N, (Chandra P., Ray A., Schlegel E., Sutaria F. and Pietsch W.), 367

Multiband optical photometry and bolometric light curve of Type Ia Supernova SN 2004S, (Misra K., Kamble A.P., Bhattacharya D. and Sagar R.), 367

Low frequency radio observations of low mass X-ray binary - Sco X-1, (Pandey M.D., Rao A.P., Manchanda R.K., Durouchoux Ph., Ishwara Chandra and Kulkarni V.H.), 367

Orbital evolution and apsidal motion in HMXB pulsars, (Raichur H. and Paul B.), 367


Detailed study of the emission properties of PSR B0826-34, (Bhattacharyya B., Gupta Y. and Gil J.), 367

Determination of orbital parameters of binary pulsars, (Bhattacharyya B., Nityananda R. and Gupta Y.), 367

Self lensing effects for compact stars and their mass-radius relation, (Ray S. and Prasanna A.R.), 367

Radio afterglow of SGR 1806-20, (Chandra P., Cameron B. Ray A., Kulkarni S. Frail D. and Wieringa M.), 367

TeV energy spectrum of the Crab Nebula as measured by the TACTIC $\gamma$-ray telescope, (Tickoo, A.K., Yadav K.K., Koul M.K., Thoudam S., Dhar V.K., Venugopal K., Bhatt N., Bhattacharyya S., Chandra P., Goyal H.C., Kaul R.K., Kothari M., Kotwal S., Koul R., Rannot R.C., Sahayanathan, S. and Sharma M.), 367

A multiwavelength investigation of the temperature of the cold neutral ISM, (Roy. N., Chengalur J.N. and Srianand R.), 367

Diagnostics of the Milky Way’s star formation history, (Banerjee S. and Ghosh P.), 367

Suggestions for an interstellar C, H$_2$ search, (Chandra S., Musrif P.G. and Dharmkare R.M), 367

Photometric study of Type Ia Supernova SN 2002hu, (Sahu D.K. and Anupama G.C.), 396

A deep focus on NGC 1883, (Tadross A.L.), 421

The nature of chromospheric active regions on V410 Tauri, (Mekkaden M.V., Pukalenthi S., Muneer S. and Anju Barbara Bastian), 433
The Galaxy and Interstellar Medium

Near-infrared photometric and spectroscopic studies on star forming regions, *(Anandarao B.G.)*, 125

Star formation studies at TIFR, *(Ghosh S.K.)*, 133

A near-infrared photometric study of the massive star forming region IRAS 21413+5442, *(Venkataraman V. and Anandarao B.G.)*, 141

Multiwavelength study of the inner regions of the Milky Way Galaxy, *(Ganesh S., Joshi U.C., Baliyan K.S., Omont A. and Simon G.)*, 145

Polycyclic aromatic hydrocarbons in interstellar medium, *(Rastogi S.)*, 167

Recent results from infrared and radio observations of massive star forming regions, *(Tej A.)*, 340

Abundance survey of Galactic disk : thin versus thick disks, *(Reddy B.E.)*, 340

High frequency carbon recombination lines as a probe to study the environment of ultra-compact HII regions, *(Roshi D.A.)*, 345


Monte Carlo simulation of molecular hydrogen formation in grain surfaces, *(Das A., Chakrabarti S.K., Chakrabarti S. and Acharyya K.)*, 367

Near-infrared photometry and radio continuum observations of the massive star-forming region IRAS 21413+5442, *(Anandarao B.G., Venkataraman V., Ghosh S.K., Ojha D.K. and Vig S.)*, 367

Infrared study of the southern Galactic star forming region associated with IRAS 14416-5937, *(Vig S., Ghosh S.K., Ojha D.K. and Verma R.P.)*, 367

Radio and infrared study of the region associated with the molecular cloud complex NGC 6334, *(Vig S., Ghosh S.K., Kulkarni V.K., Ojha D.K. and Verma R.P.)*, 367


Galaxies

Monitoring of AGNs for variability from MIRO, *(Baliyan K.S., Joshi U.C. and Ganesh S.)*, 181

Lenticular and other galaxies, *(Kembhavi A.K., Barway S. and Kumar C.D.R.)*, 189

Morphological analysis of intermediate redshift galaxies using the HST/ACS GOODS survey, *(Rawat A. and Kembhavi A.K.)*, 195
Advanced mergers of galaxies: luminosity profiles and dynamics, (Jog C.), 201

Optical observations of GRB afterglows from India, (Sagar R. and Misra K.), 209

Evolution of metals and dust in the universe, (Khare P., Kulkarni V.P., Lauroesch J.T., Fall S.M., York D.G., Welty D.E., Crotts A.P.S., Truran J.W. and Nakamura O.) 219

Is the Large Magellanic Cloud a double barred galaxy?, (Subramaniam A.), 340

Variability of active galactic nuclei, (Gupta A.C.), 340

The 2SLAQ luminous red galaxy survey, (Cannon R.), 340

Galactic halo HI clouds: recent GMRT results, (Dwarakanath K.S.), 345

Dwarf galaxies, (Begum A.), 345

Galaxy evolution in low density environments, (Omar A.), 345

Active galaxies and 'entropy floor' in galaxy clusters, (Roychowdhury S.), 349

Gravitational collapse in an expanding background and the effect of small scale perturbations on large scales, (Prasad J.), 396

Probing the radio source environments using absorption lines, (Gupta N., Ghosh T., Jeyakumar S., Saikia D.J., Salter C.J. and Srianand R.), 396

The Eridanus group of galaxies: key results, (Omar A. and Dwarakanath K.S.), 396

Evidence for relativistic outflow of ionized material from the nuclei of active galaxies, (Dasgupta S. and Dewangan G.C.), 396

Outflows from three active galaxies: NGC 1482, NGC 4438 and NGC 6764, (Hota A., Saikia D.J. and Irwin J.A.), 396

Monitoring of the blazars from Mt. Abu IR observatory, (Baliyan K.S., Joshi U.C. and Ganesh S.), 396

The nature of the peculiar QSO SDSS J153259.96-003944 (Stalin C.S. and Srianand R.), 396

Multiband optical monitoring of the blazars S5 0716+714 and BL Lacertae, (Stalin C.S., Gopal-Krishna, Sagar R., Wiita P.J., Mohan V. and Pandey A.K.), 396

Dust properties of NGC 3801, (Chaware L., Barway S., Pandey S.K., Kembhavi A.K. and Sahu D.K.), 396

A steradian of the southern sky from the Mauritius Radio Telescope, (Pandey V.N. and Shankar N.U.), 396


On which scales jets are bent to Z-shapes?, (Zier C.), 396

Intrinsic shapes of elliptical galaxies, (Chakraborty D.K., Singh A.K. and Firdous), 396


Kinematic evidence of counterrotation in the central region of the Large Magellanic Cloud, (Subramaniam A. and Prabhu T.P.), 396

The dynamics of ejecting stellar systems, (Narasimhan K.S.V.S., Hasan S.N. and Bhattacharya D.), 396

Recent observations of GRB afterglows from ARIES, Nainital, (Misra K., Pandey S.B., Ram Sagar and Bhattacharya D.), 396

Contribution from normal galaxies to the extragalactic \( \gamma \)-ray background, (Bhattacharyya D. and Sreekumar P.), 396

Optical observations and multiband modelling of the afterglow of GRB 041006: evidence of a hard electron energy spectrum, (Kuntal Misra, Resmi L., Pandey S.B., Bhattacharya D. and Sagar R.), 487