

Table of Contents

Preface	xi
Conference photograph	xiii

Recent <i>Hubble Space Telescope</i> Observations of SN 1987A: Broad Emission Lines <i>K. France</i>	1
9500 Nights of Mid-Infrared Observations of SN 1987A: the birth of the remnant <i>P. Bouchet & J. Danziger</i>	9
Radio Observations of Supernova 1987A	15
<i>L. Staveley-Smith, T. M. Potter, G. Zanardo, B. M. Gaensler & C.-Y. Ng</i>	
The radio remnant of Supernova 1987A at high frequencies and high resolution. <i>G. Zanardo, L. Staveley-Smith, C.-Y. Ng, B. M. Gaensler, T. M. Potter, R. N. Manchester & A. K. Tzioumis</i>	23
Core Collapse Supernova Models and Nucleosynthesis	27
<i>K. Nomoto</i>	
Supernova searches and rates	37
<i>E. Cappellaro</i>	
Binary Effects on Supernovae	45
<i>P. Podsiadlowski</i>	
Recent developments in supernova research with VLBI	53
<i>N. Bartel & M. F. Bietenholz</i>	
Early Emission of Core-Collapse Supernovae.....	58
<i>M. C. Bersten, O. Benvenuto & K. Nomoto</i>	
CSM-Interacting Stripped-Envelope Supernovae.....	63
<i>M. Turatto & A. Pastorello</i>	
Superluminous Supernovae	68
<i>R. M. Quimby</i>	
Supernova Optical Observations and Theory.....	77
<i>K. Maeda, M. C. Bersten, T. J. Moriya, G. Folatelli & K. Nomoto</i>	
Light Curve Modeling of Superluminous Supernovae	86
<i>T. Moriya, S. I. Blinnikov, N. Tominaga, N. Yoshida, M. Tanaka, K. Maeda & K. Nomoto</i>	
Distance determination to six nearby galaxies using type IIP supernovae.....	90
<i>S. Bose & B. Kumar</i>	

Supernova interaction with dense mass loss.....	95
<i>R. A. Chevalier</i>	
X-rays from Core-collapse Supernovae	103
<i>D. Pooley</i>	
A tale of two shocks in SN 2004dj	108
<i>A. Ray, S. Chakraborti, N. Yadav, R. Smith, P. Chandra & D. Pooley</i>	
Radio Observations Of A Nearby Type IIP SN 2012aw	112
<i>N. Yadav, A. Ray, S. Chakraborti, C. Stockdale, P. Chandra, R. Smith, R. Roy, V. Dwarkadas, F. Sutaria, D. Pooley, B. Kumar & S. Bose</i>	
The optical photometric and spectroscopic investigation of Type IIP supernova 2012A	116
<i>R. Roy, F. Sutaria, S. Bose, S. Johnson, V. Dwarkadas, B. York, B. Kumar, B. Kumar, V. K. Bhatt, S. Chakraborti, D. York, A. Ritchey, G. Saurage & M. B. Kaiser</i>	
Supernova progenitor mass constraints through spatial correlations with host galaxy star formation.....	121
<i>J. P. Anderson</i>	
Light Echoes of Historic Transients	126
<i>A. Rest, B. Sinnott, D. L. Welch, J. L. Prieto & F. Bianco</i>	
Circumstellar interaction in Type IIn supernovae.....	135
<i>P. Chandra, R. A. Chevalier, N. Chugai, A. M. Soderberg & C. Fransson</i>	
The dusty debate: core-collapse supernovae and dust.....	144
<i>R. Kotak</i>	
Molecules and dust in the ejecta of Type II-P supernovae.....	151
<i>I. Cherchneff & A. Sarangi</i>	
Autopsy of the Supernova Remnant Cassiopeia A	155
<i>D. Milisavljevic & R. A. Fesen</i>	
Dust Destruction in the Cygnus Loop Supernova Remnant.....	160
<i>R. Sankrit, W. P. Blair, J. C. Raymond & B. J. Williams</i>	
An Integral View of Balmer-dominated Shocks in Supernova Remnants	165
<i>S. Nikolić, G. van de Ven, K. Heng, D. Kupko, J. A. Lopez Aguerri, J. Méndez-Abreu, J. F. Serra & J. Beckman</i>	
Molecular Environments of Supernova Remnants	170
<i>Y. Chen, B. Jiang, P. Zhou, Y. Su, X. Zhou, H. Li & X. Zhang</i>	
The molecular emission from old supernova remnants	178
<i>A. Gusdorf, R. Güsten, S. Anderl, T. Hezareh, & H. Wiesemeyer</i>	
SRAO CO Observation of Supernova Remnants in $l = 70^\circ$ to 190°	183
<i>I.-G. Jeong & B.-C. Koo</i>	
The Galactic distribution of SNRs	188
<i>D. A. Green</i>	

Observations and discoveries of supernova remnants with GMRT.....	197
<i>S. Roy & S. Pal</i>	
Radio polarization observations of large supernova remnants at $\lambda 6$ cm	202
<i>J. L. Han, X. Y. Gao, X. H. Sun, W. Reich, L. Xiao, P. Reich, J. W. Xu, W. B. Shi, E. Fürst & R. Wielebinski</i>	
Discovery of supernova remnants in the Sino-German $\lambda 6$ cm polarization survey of the Galactic plane	210
<i>X. Y. Gao, X. H. Sun, J. L. Han, W. Reich, P. Reich & R. Wielebinski</i>	
Infrared [Fe II] and Dust Emissions from Supernova Remnants	214
<i>B.-C. Koo</i>	
The First Systematic Multi-wavelength Survey of Extragalactic Supernova Remnants	222
<i>I. Leonidaki, P. Boumis & A. Zezas</i>	
Thermal X-ray Spectra of Supernova Remnants	226
<i>P. Slane</i>	
X-ray imaging and spectroscopic study of the SNR Kes 73 hosting the magnetar 1E 841–045	235
<i>H. S. Kumar, S. Safi-Harb, P. O. Slane, & E. V. Gotthelf</i>	
What Shapes Supernova Remnants?	239
<i>L. A. Lopez</i>	
Nonthermal X-rays from supernova remnants	245
<i>A. Decourchelle</i>	
Supernovae driven galactic outflows	253
<i>B. B. Nath</i>	
Reprise of the Supershells	260
<i>S. Chakraborti & A. Ray</i>	
The Supernova – ISM/Star-formation interplay	265
<i>G. Hensler</i>	
Supernovae and the Galactic Ecosystem	273
<i>Q. D. Wang</i>	
Formation of cold filaments from colliding superbubbles	282
<i>E. Ntormousi, K. Fierlinger, A. Burkert & F. Heitsch</i>	
Gamma-ray observations of supernova remnants.....	287
<i>M. Lemoine-Goumard</i>	
<i>Fermi</i> -LAT and WMAP observations of the supernova remnant Puppis A	295
<i>M.-H. Grondin, J. W. Hewitt, M. Lemoine-Goumard & T. Reposeur, for the Fermi-LAT collaboration</i>	
TeV γ -ray source MGRO J2019+37 : PWN or SNR?.....	300
<i>L. Saha & P. Bhattacharjee</i>	

Supernova remnants and the origin of cosmic rays	305
<i>J. Vink</i>	
Probing the effects of hadronic acceleration at the SN 1006 shock front	315
<i>M. Miceli, F. Bocchino, A. Decourchelle, G. Maurin, J. Vink, S. Orlando, F. Reale & S. Broersen</i>	
Interaction of escaping cosmic rays with molecular clouds	320
<i>S. Gabici</i>	
Simulating the Outer Nebula of SN 1987A	328
<i>B. Fitzpatrick, T. Morris & P. Podsiadlowski</i>	
Three-dimensional simulations of the expanding remnant of SN 1987A	330
<i>T. Potter, L. Staveley-Smith, J. Kirk, B. Reville, G. Bicknell, R. Sutherland, A. Wagner & G. Zanardo</i>	
V-band light-curve morphologies of supernovae type II	332
<i>J. P. Anderson</i>	
Optical observations of supernova 2012aw	334
<i>S. Bose, B. Kumar, F. Sutaria, R. Roy, B. Kumar, V. K. Bhatt, & S. Chakraborti</i>	
Evolution of the Type I Ib SN 2011fu	336
<i>S. B. Pandey, B. Kumar, D. K. Sahu, J. Vinko, A. S. Moskvitin, G. C. Anupama, V. K. Bhatt, A. Ordasi, A. Nagy, V. V. Sokolov, T. N. Sokolova, V. N. Komarova, B. Kumar, S. Bose, R. Roy & R. Sagar</i>	
Optical studies of Type I Ib SN 2011dh	338
<i>D. K. Sahu, G. C. Anupama & N. K. Chakradhari</i>	
SN 2010as and Transitional Ib/c Supernovae	340
<i>G. Folatelli</i>	
The strange case of SN 2011ja and its host	342
<i>S. Chakraborti, A. Ray, R. Smith, S. Ryder, N. Yadav, F. Sutaria, V. V. Dwarkadas, P. Chandra, D. Pooley, & R. Roy</i>	
Type Ib Supernova 2007uy – a multiwaveleghth perspective	344
<i>R. Roy & B. Kumar</i>	
A double plateau and unprecedented circumstellar variable sodium in the transient SN 2011A	346
<i>T. de Jaeger, J. Anderson, G. Pignata & M. Hamuy</i>	
Spectral analysis of type II supernovae	348
<i>C. P. Gutiérrez, J. Anderson, M. Hamuy, G. Folatelli and the CSP team</i>	
Using the environment to understand supernova properties	350
<i>L. Galbany, V. Stanishev & A. Mourão</i>	
Multi-band optical light-curve behavior of core-collapse supernovae	352
<i>B. Kumar</i>	
A comparative study of GRB-Supernovae	354
<i>L. Resmi & K. Misra</i>	

GRB as luminosity indicator	356
<i>R. Basak & A. R. Rao</i>	
On the hadronic γ -ray emission from Tycho's Supernova Remnant	358
<i>X. Zhang, Y. Chen, H. Li & X. Zhou</i>	
An XMM-Newton study of the mixed-morphology supernova remnant W28	360
<i>P. Zhou, S. Safi-Harb, Y. Chen, & X. Zhang</i>	
The Structure of Overionized Plasma in SNR IC 443	362
<i>B. Jiang, F. Bocchino, M. Miceli, E. Troja, Y. Chen & H. Yamaguchi</i>	
An interpretation of the overionized plasma in supernova remnant W49B	364
<i>X. Zhou, M. F. Bocchino, S. Orlando, Y. Chen, L. Ji & J. Yang</i>	
GMRT Observations of SNR G15.4+0.1/HESS J1818–154	366
<i>G. Castelletti, B. C. Joshi, M. P. Surnis, L. Supán & G. Dubner</i>	
Near-Infrared Study of Iron Knots in Cassiopeia A Supernova Remnant	368
<i>Y.-H. Lee, B.-C. Koo, D.-S. Moon & M. G. Burton</i>	
Supernova Remnants in the UWISH2 and UWIFE Surveys	370
<i>Y.-H. Lee, B.-C. Koo & J.-J. Lee</i>	
Kinematic Distances of SNRs W44 and 3C 391	372
<i>H. Su, W. Tian, H. Zhu & F. Y. Xiang</i>	
Multi-band Observation of TeV Supernova Remnants	374
<i>W. W. Tian, D. A. Leahy, & H. Su</i>	
A combined GMRT/CLFST imageof IC443 at 150 MHz	376
<i>D. Mitra, D. A. Green & A. Pramesh Rao</i>	
Distances of Galactic supernova remnants	378
<i>H. Zhu & W. Tian</i>	
Locating the TeV γ -rays from the shell regions of Cassiopeia A	380
<i>L. Saha, T. Ergin, P. Majumdar & M. Bozkurt</i>	
Simulations of RS Oph and the CSM in Type Ia Supernovae	382
<i>R. A. Booth, S. Mohamed & P. Podsiadlowski</i>	
Outer Shock Interaction in Young Core-Collapse SNRs	384
<i>J.-J. Lee</i>	
Fast-Expanding HI Shells Associated with Supernova Remnants in the I-GALFA Survey	386
<i>G. Park, B.-C. Koo, S. J. Gibson, & J.-h. Kang</i>	
Observations of O VI Absorption from the Superbubbles of the Large Magellanic Cloud	388
<i>A. C. Pradhan, A. Pathak, J. Murthy & D. K. Ojha</i>	
Heavy Elements Produced in Supernova Explosion and thier Propulsion in the ISM	390
<i>R. Baruah</i>	
IR and sub-mm fluxes of SN1987A revisited: when moderate dust masses suffice	392
<i>A. Sarangi & I. Cherchneff</i>	

Contents

Radio studies of relativistic SN 2009bb	395
<i>A. Ray, N. Yadav, S. Chakraborti, A. Soderberg & P. Chandra</i>	
Clumping of ejecta and accelerated cosmic rays in the evolution of type Ia SNRs	397
<i>S. Orlando, F. Bocchino, M. Miceli, O. Petruk & M. L. Pumo</i>	
Author index	399