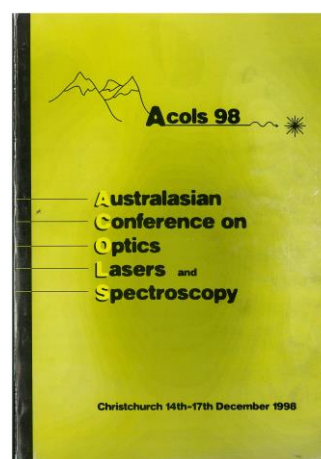


Australasian Conference on Optics, Lasers & Spectroscopy 1998

Christchurch NZ, 14 - 17 December

The Australian Optical Society (AOS) has digitised the contents/index pages of this conference\*.

The conference volume contains the individual papers, and is held by one or more libraries in Australia; please refer to the website: <http://optics.org.au/AOS-Conference>



Authors	Title	Page
	<b>MONDAY 14 DECEMBER</b>	
CE Wieman	Frew Lecture: Bose-Einstein condensation in a dilute gas: Surprises and new directions	45
	<b>Bose-Einstein Condensation I</b>	
CW Gardiner	How does a condensate grow, and where does its coherence come from?	46
JD Close, F Federmann, K Hoffmann & N Quaas	Quantized circulation in superfluid helium nanodroplets?	48
K-P Marzlin & W Zhang	Photonic band gaps in a Bose-Einstein condensate confined in an optical lattice	50
E Bolda, MJ Dunstan & DF Walls	Detection of vortices in Bose-Einstein condensates by direct interference	52
KMD Vant, GH Ball, H Ammann & N Christensen	Quantum decoherence in a system with Cantori	54
	<b>Lasers &amp; Non-Linear Optics I</b>	
KA Shore	Control and synchronisation of chaotic laser diodes for optical cryptography	47
I Velchev, D Neshev, W Hogervorst & W Ubachs	Turning Q-switched lasers into more versatile tools by compact and inexpensive SBS-compressors	49
RJ Carman, MJ Withford, DJW Brown, R Mildren & JA Piper	Performance enhancement and plasma kinetics studies in a copper vapour laser with HCl additives	51
IT McKinnie, P Jain, A Oien, N Russell, DM Warrington & L Gloster	Tangential phasematching and walkoff compensation in optical parametric oscillators	53
J Nayer	Synchronization requirements in fast modulation/switching of laser pulses by intersecting waveguides with curved electrodes	55
	<b>Applications I: High Precision</b>	
U Schreiber & GE Stedman	High resolution laser gyroscopes	56
SJ Cooper, DN Wright & E Howick	Frequency-space compression of the optical beat signal from an iodine stabilised helium-neon laser using a dither-tuned receiver	58
PJ Manson	Simple, high precision measurements of cavity free spectral range	60
AN Luiten, R Kovacich & JJ McFerran	Optical frequency synthesis with 1Hz resolution	62
	<b>Spectroscopy I</b>	



DE Heard	Detection of atmospheric OH by laser-induced fluorescence using a copper vapour/dye laser	57
PM Danehy, P Palma, P Mere, S O'Byrne & F Houwing	New laser-induced fluorescence methods for studying hypersonic flows	59
D McNaughton, B Wood, M Romeo & M Kansiz	Infrared micro-spectroscopy applied to medicine and biology	61
MM Browne & H Griesser	XPS analysis of chemical changes on polymer surfaces upon UV excimer irradiation	63
	<b>Applications II: Imaging</b>	
G Voevodkin	Optical biomedical imaging with photon tunnelling through opaque scattering barriers "faster than Einstein 's speed of light"	64
X Gan, SP Schilders & M Gu	Fluorescence microscopic imaging through turbid media	66
PCS Devara, PE Raj, RS Maheskumar, G Pandithurai & KK Dani	Mixing depth climatology of the nocturnal urban atmosphere from long-term aerosol laser radar measurements at a tropical station	68
	<b>Applications III: New Structures</b>	
AV Rode, B Luther-Davies & E Gamaly	Laser deposition with mode locked Nd:YAG picosecond laser	65
A Samoc, M Samoc, B Luther-Davies, H Liebegott, R Stockmann & H-H Hoerhold	Third-order nonlinearities of new PPV-like conjugated polymers	67
P Wang, J Dawes & RS Feigelson	Growth of Nd <sub>x</sub> Y <sub>1-x</sub> Al <sub>3</sub> (BO <sub>3</sub> ) <sub>4</sub> crystal films by liquid phase epitaxy for waveguide laser applications	69
	<b>Monday Poster Session</b>	
	<b>Spectroscopy PI</b>	
TDM Bell, KP Ghiggino, K Jolliffe, SJ Langford & M Paddon-Row	Ultrafast spectroscopy of photoinduced electron transfer in a giant rigid multi-chromophoric system	70
D Death, J Eberhardt, R Read & C Rogers	NIR gas phase spectroscopy for metal smelting using tuneable diode lasers	71
G Allen, N Hore, N Renner & D Russell	IR diode laser spectra of short-lived ketenes generated by IR laser pyrolysis	72
HG Kjaergaard, Z Rong, C Zhu & BR Henry	Internal methyl rotation in the CH-stretching overtone spectra of toluene and 2, 6-difluorotoluene	73
JK Laerdahl & P Schwerdtfeger	Parity violations in molecules within a fully relativistic formalism	74
M Pempointner & P Schwerdtfeger	Accurate determination of nuclear quadrupole moments in heavy elements	75
P Hannaford & M Lowe	The Swinburne University ultrafast laser facility	76
KC Taylor, VS Langford & BE Williamson	Magnetic circular dichroism and the Jahn-Teller effect in axial (D <sub>n</sub> ) molecules	77
G Fischer & P Wormell	Singlet and triplet states of pyridazine	78
C Vallance, W Hu & PW Harland	Spatial de-orientation lifetimes for upper Stark state selected beams of CH <sup>3</sup> F, CH <sub>3</sub> Cl and CHF <sub>3</sub> in field-free Space	79
	<b>Applications PI</b>	
KP Ghiggino, TA Smith & P Spizzirri	Time-resolved confocal fluorescence microscopy of porphyrins	80



N Zharkova, V Fabelinsky, D N Kozlov, VV Smirnov, O Stel'malkh, V Sokolov & V Chissov	Fluorescence diagnostics and photodynamic therapy of tumors using photosensitizers: optical equipment, research and clinical practice	81
V Polivanov, VV Smirnov, O Stel'makh, M Ehbrecht & F Huisken	Deposition and analysis of carbon and silicon clusters generated by laser-induced gas phase reaction	82
E Krausz, S Margerison & R Pace	Surface-enhanced Raman spectroscopy for membrane characterisation	83
R Purchase MJ Sellars, E Krausz & NB Manson	Electric-field-induced broadening of spectral holes in zinc phthalocyanine	84
TA Smith, KP Ghiggino, N Lokan & M Paddon-Row	Spectroscopy of ultrafast intramolecular electronic excitation energy transfer over 12 Å <sup>o</sup>	85
M Romeo, F Burden & D McNaughtmn	Infrared spectroscopy and artificial neural networks in the diagnosis of cervical cancer	86
FJ Wallis, R Morrison & B Chadwick	Analysis of the inorganic components of low-rank coal using laser-induced breakdown spectroscopy	87
R Baxter, R Pace, E Krausz & T Wydrzynski	Laser induced changes of the near-IR absorption of the oxygen evolving complex of the plant PSII system	88
G Wilkinson, R Kunemeyer, P Schaare & C Cook	Fiber optic biosensor	89
	<b>Quantum Optics PI</b>	
GH Ball, KMD Vant, H Ammann & N Christensen	Computational results in quantum chaos with microkelvin atoms	90
GJ Milburn, PT Cochrane & WJ Munro	Cat states as a bosonic code for amplitude damping	91
DT Pegg & S Barnett	Retrodiction and state truncation	92
BC Sanders & A Mann	Vector phase in quantum interferometry	93
G Pryde, MJ Sellars, T Dyke & NB Manson	Investigation of decoherence in optical transitions using phase sensitive detection	94
JW Wu, MB Gray, PK Lam, JR Gao & H-A Bachor	Quantum and classical states measurements by optical homodyne tomograph	95
P Edwards, L Barbopoulos, G Ganesharajah, B Daron, C Jagadish & S Yuan	Correlated twin beams from a symmetric cavity semiconductor diode laser	96
F Koenig, A Sizmann, G Leuchs & MW Hamilton	High order moments in the fluctuations of amplitude squeezed solitons in fibres with Kerr nonlinearity	97
S Rebic, SM Tan, AS Parkins & DF Walls	Photon blockade with a single atom	98
	<b>Lasers and Non-Linear Optics PI</b>	
S Afshaawahid & J Munch	Transient phase conjugation using stimulated Brillouin scattering (A numerical study)	99
KM Bultitude & PM Danehy	Characterisation of a modeless broadband coherent anti-Stokes Raman spectroscopy (BB-CARS) system	100
N Dushkina, B Ullrich, H Sakai & T Eiju	Effect of the crystal direction on the optical properties of thin CdS films formed by laser ablation	101
K Franklin, PJ Manson, D M Warrington & WJ Sandle	Cavity length dependence of the output of a neon Raman laser	102
SM Giffin & IT McKinnie	Tunable visible solid state lasers based on SHG of Cr:forsterite and LiF:F <sub>2</sub> <sup>-</sup> in KTP	103
JC Diettrich, SJ Collett, IT McKinnie, DM Warrington, K Gordon & S Page	Raman spectroscopy with novel narrowband coupled Ti:sapphire lasers	104



P Wang, J Dawes, P Dekker, JA Piper, H Zhang & X Meng	Novel ytterbium laser materials for diode-pumping	105
MA Larotonda, A A Hnilo, C R Mirasso & K A Shore	Application of amplitude instability in an all-solid state laser scheme for chaotic communication	106
WJ Wadsworth, IT McKinnie, AD Woolhouse & TG Haskell	Distributed feedback dye laser in a solid state host with a dynamic grating	107
P Dekker & J Dawes	Saturable absorber Q-switching of Nd:YVO <sub>4</sub> using Cr <sup>4+</sup> :YAG	108
S Murdoch, Z Rong, R Leonhardt & J D Harvey	Efficient frequency conversion in fibers with tailored birefringence	109
JM Dudley, JD Harvey, SM Boussem & DMJ Cameron	Dispersive instabilities in the self-modelocked Ti:Sapphire Laser	110
MD Thomson, JM Dudley, LP Barry & JD Harvey	Complete pulse characterisation using nonlinear effects in optical fibres	111
	<b>Optics and Lasers PI</b>	
DM Kane & D Halfpenny	Surface modification associated with UV laser irradiation of glass flats with distributed sub-micron particles	112
PS Fairman & B Oreb	Assessment of relief measurement accuracy from the photometric stereo method	113
RP Netterfield, DJ Drage, C Freund, C Walsh, A Leistner, J Seckold & B Oreb	Surface figure measurement of reflecting optical surfaces in a Fizeau interferometer	114
F Benabid, M Notcutt, L Ju & DG Blair	Rayleigh scattering and birefringence of sapphire test mass in laser-interferometer gravitational-wave detectors	115
DP McLeod & S J Cooper	Transverse mode selection in helium-neon lasers with long supercavity resonators	116
SJ Cooper, DP McLeod, GE Stedman, T Webb & U Schreiber	Ring laser gyroscopes as seismic rotation sensors	117
R Bulla, G Davis, D Farrant, A Leistner, F Lesha, B Oreb, E Pavlovic, J Seckold, C Sona, W Stuart & C Walsh	LIGO optics fabrication and testing	118
DN Wright, U Schreiber & GE Stedman	Main variance analysis of bandlimited noise introduced by slow stabilisation	119
TJ Davis	Reflector design using tailored edge-rays	120
TK Gangopadhyay	Electrically-isolated sensor for surface vibration analysis using monomode optical fiber	121
J Lekner	Rotation of the plane of polarization on reflection	122
D Gramotnev & DFP Pile	Double-resonant extremely asymmetrical scattering of electromagnetic waves in periodic Bragg arrays	123
AK Tieu, Y Mao & EB Li	The determination of particle size distribution based on forward laser Mie scattering	124
LR Watkins, SM Tan & TH Barnes	A novel goniometric ellipsometer	125
OA Gredeskoul, RA O'Sullivan & KW McGregor	Theoretical model of optical bistability in thermochromic liquid	126
Z Alwahabi, J Reppel, GJ Nathan & KD King	Laser diagnostic studies in precessing jet flames	127
I Bishop, B Littleton, TJ McIntyre & H Rubinsztein-Dunlop	Number density measurements using near resonant holographic interferometry	128



JM Fishburn, MJ Withford, DJW Brown, EK Illy & JA Piper	Micromachining of common & refractory metals using a CVL-MOPA chain	129
A Dorrington & R Kunnemeyer	Electronic processing of small displacement Doppler signals	130
AN Chalmers	Colour models and image colour quality	131
	<b>TUESDAY 15 DECEMBER</b>	
SR Leone	Coherent Scientific Plenary Lecture: Phase and amplitude control of molecular wave packet dynamics with tailored ultrafast laser pulses	134
AI Ferguson	Plenary Lecture: Solid state lasers for multiphoton fluorescence imaging	135
JS Fender	Plenary Lecture: Optics, lasers and spectral sensing in space in the 21 <sup>st</sup> century	136
	<b>Quantum &amp; Atom Optics I</b>	
SM Tan	A computational toolbox for quantum and atomic optics	138
HM Wiseman	In-loop squeezing is real squeezing to an in-loop atom	140
TC Ralph, R Polkinghorne & PK Lam	Characterization of teleportation in optics	142
	<b>Spectroscopy II</b>	
W Ubachs	XUV-laser spectroscopy on two-electron systems; He and H <sub>2</sub>	139
D Berry, NR Heckenberg & H Rubinsztein-Dunlop	Strong heating effects in optical trapping	141
D Milic, M Colla, M Hoogerland, KGH Baldwin & S Buckman	Cold atomic collisions in a metastable helium trap	143
	<b>Quantum &amp; Atom Optics II</b>	
W Jhe	Atom optics with hollow optical systems	144
YB Ovchinnikov, I Manek, AI Sidorov, G Wasik & R Grimm	A novel gravito-optical atom trap based on a conical laser beam	146
PK Lam, JR Gao, TC Ralph, BC Buchler, DE McClelland & H-A Bachor	Vacuum squeezing from a below threshold OPO	148
L Horvath, BC Sanders & BF Wielinga	Multiphoton coincidence spectroscopy	150
	<b>Spectroscopy III</b>	
BJ Orr, GW Baxter & Y He	Pulsed optical parametric oscillators: prospects for spectroscopic sensing	145
R Leonhardt & JD Harvey	THz spectroscopy using amplitude modulated light	147
SL Gilbert & W Swann	Spectroscopic references for optical fiber communications	149
C Wei, MJ Sellars & NB Manson	Dynamic stark splitting in a driven EIT	151
	<b>Lasers &amp; Non-Linear Optics II</b>	
JD Harvey, BC Thomsen, JM Dudley & LP Barry	Optical autocorrelation, thresholding and demultiplexing using two photon absorption	152
PS Spencer, DM Kane, JS Lawrence & KA Shore	Spectral and dynamical behaviour of FM and external cavity semiconductor lasers	154
TJ Alexander, YS Kivshar, A Buryak & R Sammut	Spatial vortex solitons due to parametric wave mixing	156
EA Ostrovskaaya & YS Kivshar	Nonlinear soliton waveguides and solitonic gluons	158
	<b>Applications IV: Biomedical</b>	



H Rubinsztein-Dunlop, MEJ Friese & NR Heckenberg	Optical tweezers and their applications	153
SP Schilders & M Gu	Three-dimensional autofluorescence spectroscopy of biological tissue under two-photon excitation	155
S Bayoudh, H Rubinsztein-Dunlop & NR Heckenberg	Micromanipulation of smooth muscle cells and macrophages with optical tweezers and scissors	157
KM Kerr, K Nugent & M Livett	Development and application of a laser tweezing-Raman spectroscopy	159
	<b>TUESDAY POSTER SESSION</b>	
	<b>Spectroscopy PII</b>	
R Brown, JK Laerdahl & P Schwerdtfeger	The accuracy of the relativistic pseudopotential method. A comparison to Dirac-Fock many-body-perturbation theory	160
I Lim, M Pempointner, M Seth & P Schwerdtfeger	Accurate relativistic static dipole polarizabilities for the $^2S_{1/2}$ ground state of the Group 1 series of atoms from H to superheavy element 119 (eka-fr)	161
R Wesendrup & P Schwerdtfeger	Spectroscopic constants from relativistic quantum theory for the isoelectronic series AuPt <sup>+</sup> , Au <sub>2</sub> and AuHg <sup>+</sup>	162
K Stockman, V Karaganov, P Farrell & P Teubner	Optical pumping in potassium vapour	163
LD Turner, V Karaganov & P Teubner	Saturated absorption spectroscopy of the potassium D <sub>2</sub> line	164
W Clauss, V Fabelinsky, DN Kozlov, VV Smirnov, O Stel'makh & K Vereschagin	CARS thermometry of hydrogen/oxygen combustion	165
BJ Prince, BE Williamson & RJ Reeves	Selective fluorescence-detected MCD and multi-mode Jahn-Teller Coupling in metalloporphyrins	166
JK Hurst, P Wormell & AR Lacey	The electronic spectrum of 1,4, 5, 8-tetraazanaphthalene	167
G Low & HG Kjaergaard	Calculated overtone intensities of small water clusters	168
D Death, J Eberhardt, R Read & C Rogers	LIBS sensors for material and ore sorting	169
	<b>Non-Linear Optics PII</b>	
JJ McFerran & AN Luiten	CW light generation at new wavelengths and its application to coherent optical-to-microwave frequency chains	170
IJ Anikeev & J Munch	Variation of the coherence length of a phase conjugating oscillator	171
RY Choie, IT MoKinnie, WJ Sandle, TH Barnes & AD Woolhouse	Observation of thermal phase gratings in dye-doped films	172
DN Kozlov B Hemmerling & W Hubschmid	Laser-induced gratings in gases; application for diagnostics of thermodynamic, transport and relaxation parameters	173
KA Shore & Y Hong	Experimental demonstration of optical bistability in a GaAlAs semiconductor laser under intermodal injection locking	174
KA Shore & JM Tang	Optical pulsewidth manipulation using a strong picosecond control pulse in As	175
G Kociuba, D Tang & NR Heckenberg	Periodic slaving of chaos	176



DM Kane	Simulations of FM noise measurement for a semiconductor laser with strong optical feedback	177
BC Thomsen, JM Dudley, LP Barry & J D Harvey	A compact semiconductor source of THz-modulated light at 1.55 $\mu\text{m}$	178
CB Rawle, IT McKinnie, JC Diettrich, WJ Sandle & VV Ter-Mikirtychev	Efficient room temperature $\text{LiF:F}_2^+$ lasers	179
	<b>Bose-Einstein Condensation and Atom Optics PI</b>	
PB Blakie, RJ Ballagh & CW Gardiner	Dressed states of a two component Raman coupled Bose-Einstein condensate	180
D Gordon & C M Savage	Relative phase in a two-species Bose-Einstein condensate	181
K-P Marzlin & W Zhang	Manipulating elementary excitations of a Bose-Einstein condensate	182
MJ Davis, CW Gardiner, MD Lee & RJ Ballagh	Growth of a Bose-Einstein condensate from evaporative cooling	183
CR McKenzie, N Thomas, JC Sharpe, J Martin, DM Warrington, PJ Manson, WJ Sandle & A Wilson	The Bose Einstein condensation experiment at Otago University	184
AG Truscott, WK Hensiner, M Hug, H Rubinsztein-Dunlop, NR Heckenberg & GJ Milburn	Towards the experimental realisation of quantum tunneling	185
RT Sang, J Ashmore, WR MacGillivray & MC Standage	The development of a slow metastable neon beam for atomic collision experiment	186
M Colla, D Milic, M Hoogerland, KGH Baldwin & S Buckman	A magneto-optic trap (MOT) for metastable helium atom	187
CJ Vale, MR Walkiewicz, P Farrell & RE Scholten	Atomic beam techniques in a vapour cell	188
	<b>Atom and Quantum Optics PII</b>	
JE Lye, JD Close, BD Cuthbertson & H-A Bachor	The measurement of atomic cloud densities using phase modulation spectroscopy	189
JA Richmond, SN Chormaic, BP Cantwell & GI Opat	Magnetic tubing for cold atoms	190
I Sidorov, J Koperski, DS Gough, BA Sexton, WJ Rowlands, DC Lau, RJ McLean, P Hannaford & GI Opat	Atom optics with micron-scale magnetic structures	191
T Mackin, R E Scholten, P Farrell & A Price	The calculation of trajectories for atom lithography with arbitrary light fields	192
MW Jack, MJ Collett & DF Walls	Non-Markovian quantum trajectories	193
BP Cantwell, SN Chormaic, JA Richmond & GI Opat	An oscillating mirror beam splitter for laser cooled neutral atoms	194
BD Cuthbertson, JD Close, H-A Bachor, ICM Littler, JD Eschner & KGH Baldwin	An efficient atomic beamsplitter for atom interferometry	195
BJ Dalton	Quasi-mode theory of the beam splitter	196
TJ Davis	The propagation of atomic de Broglie waves in waveguides	197
JD Close, BD Cuthbertson, JE Lye & H-A Bachor	The anatomy of a Bose Einstein condensation experiment	198
JD Close, F Fedennann, K Hoffmann & N Quaas	Superfluid helium droplets: A nanoscale cryostat for high resolution spectroscopy	199

AC Doherty, AS Parkins, SM Tan & DF Walls	Effects of motion in cavity QED	200
M Bosticky, Z Ficek & BJ Dalton	Multiphoton resonances in the probe absorption spectra of a strongly driven two level atom in a detuned narrow bandwidth squeezed vacuum	201
R Singh & AS Chirkin	Generation of non-classical light by doubling the frequency at the large efficiency of transformations	202
	<b>Optics and Lasers PII</b>	
J Kurusingal	A laser microprobe for FMM studies	203
S Wade, P Farrell, V Bogdanov, S Collins & G Baxter	Modelling of the temperature dependent lifetimes of thermally coupled levels in Eu <sup>3+</sup> -doped silica fibre	204
D Lorenz, K Mittler, R Menzel, C Horneber & G Hausler	Coherence radar measurements with broadband Ti:sapphire and Cr:YAG laser	205
TP Brown, E Wong, M Notcutt, T Mann & DG Blair	Frequency stabilisation of a Nd:YAG laser to a cavity at liquid nitrogen temperatures	206
PG Foster M Hartmann, R Mayerhofer & D McCoy	Comparison of elemental copper vapour and copper bromide laser systems	207
DJ Butler, G Forbes & S Saghafi	Implications of diffraction theory for aperture area measurement	208
JF Clare	Integrating sphere performance; the sphere with a flat port revisited	209
D Gramotnev & JA Ross	Anomalous absorption of electromagnetic waves in a thin layer with small permittivity	210
D Gramotnev, TA Nieminen & DFP Pile	Extremely asymmetrical scattering of electromagnetic waves in non-uniform periodic arrays	211
DJ Drage, RP Nettetfield & C Freund	In situ ellipsometric monitoring of dielectric optical thin films	212
J Lekner	Brewster angle shifts on reflection from layered media	213
E Jaatinen & N Brown	Direct length measurement with primary wavelength standards	214
J Walford, K Nugent, A Roberts & RE Scholten	Three dimensional phase imaging using a scanning optical fibre interferometer	215
JC Hazel, WJ Sandle, JAA Hood & KD Hinsch	Electronic speckle pattern interferometry: Distortion measurements in teeth	216
D Tran	Vibration modal analysis of shell structure by Finite Element method and laser interferometry	217
Y Mao, AK Tieu, DY Yu & EB Li	Study of digital processing technology on the distortion correction of medical endoscope optics	218
EK Illy, DJW Brown, MJ Withford & JA Piper	Laser micromachining: Common applications utilising high-pulse-rate frequency doubled copper lasers	219
DR Oliver, A Berry & E Krausz	Imaging spectroscopy of microscopic fluid inclusions in minerals	220
RF White, J Mahoney & D Proctor	Flow velocity and size measurement of particulate in two phase flow using particle tracking	221
KW McGregor, RA O'Sullivan, JF Scott & OA Gredeskoul	Laser induced optical bistability in thermochromic liquid films	222
TJ McInme, AI Bishop, A Thomas & H Rubinsztein-Dunlop	Optical techniques for electron concentrations measurements in high velocity flows	223
IJ Wilson & TD Cocks	HyMap™ - the Australian Advanced Hyperspectral Sensor	224
	<b>WEDNESDAY 16 DECEMBER</b>	





DC Lau, RJ McLean, AI Sidorov, DS Gough, J Koperski, WJ Rowlands, BA Sexton, GI Opat & P Hannaford	Plenary Lecture: Magnetic optical elements for laser-cooled atoms	226
DF Walls	Plenary Lecture: Single photon quantum control via high $\chi^{(3)}$ media	227
	<b>Walls Symposium I</b>	
HJ Kimble	Quantum networks for quantum communication and computation	228
E Hinds	Controlling the acrobatic atom	232
GI Opat	Magnetostatic elements in atom optics	234
	<b>Spectroscopy IV</b>	
FTH den Hartog, MP Bakker, C van Papendrecht, RJ Silbey & SL Volker	Long-time spectral diffusion induced by short-time energy transfer in doped organic glasses studied by hole-burning	229
M Samoc, A Samoc, B Luther-Davies, H Reisch & U Scherf	Time-resolved saturable absorption in poly(indenofluorene)	231
SA Brown, JF Young, JA Brum, P Hawrylak, Z Wasilewski & P Coleridge	Many-body effects in the optical spectra of semiconductor quantum wells	233
DA Wardle & JD Harvey	Direct measurement of the spontaneous Raman scattering probability in a single mode optical fibre	235
T Rudolph, HS Freedhoff & Z Ficek	Suppression of fluorescence in a two-level atom driven by a polychromatic field	237
	<b>Walls Symposium II</b>	
RJ Hughes, WT Buttler, PG Kwiat, SK Lamoreaux, G G Luther, GL Morgan, JE Nordholt & CG Peterson	Quantum cryptography	238
GJ Milburn & S Schneider	Decoherence and noise in ion trap quantum computers	240
RJ Glauber	Statistics of cold atom beams	242
	<b>Spectroscopy V</b>	
WD Lawrance	Angular momentum influences in vibrational energy transfer involving large molecules	239
M Seth & P Schwerdtfeger	The chemistry and physics of the superheavy elements	241
JA Harrison, N Balucani, W Chapman, DJ Cook, GC Pimentel, RJ Saykally, S Schlemmer, B Steiner, DR Wagner & B Wurfel	A mid-IR emission study of UV excited PAHs	243
AP Milce & BJ Orr	Symmetry-breaking perturbations in the $\nu_{CC} + 3 \nu_{CH}$ rovibrational manifold of acetylene at $11\,600\text{ cm}^{-1}$	245
	<b>Walls Symposium III</b>	
PD Drummond, K Kheruntsyan & H He	Novel solitons in parametric amplifiers and atom lasers	246
H-A Bachor, TC Ralph, PK Lam, JR Gao, BC Buchler, EH Huntington, JW Wu & DE McClelland	Avoiding the quantum limits of light: From theory to engineering	248
RE Scholten, P Farrell, T O'Kane, MR Walkiewicz, P Fox, T Mackin & T Hunt	Manipulating atomic trajectories with laser light	250
	<b>Lasers &amp; Non-Linear Optics III</b>	



MW Hamilton, K Corbett, T Hill & L Stamatescu	Multimode laser dynamics	247
HM Pask & JA Piper	Solid-state intracavity Raman lasers	249
JC Dietrich, IT McKirmie, DM Warrington & WJ Wadsworth	High repetition rate gain-switched Cr:forsterite laser	251
JS Lawrence & DM Kane	Injection locking of semiconductor lasers with optical feedback – a method for suppression of coherence collapse	253
	<b>THURSDAY 17 DECEMBER</b>	
W Sibbert	Plenary Lecture: Modern ultrashort-pulse sources: Practicality with versatility	256
K Nugent	Plenary Lecture: Non-interferometric phase imaging	257
	<b>New Faces</b>	
B Allman, W-T Lee, O Motrunich & SA Werner	Observation of scalar Aharonov-Bohm effect with longitudinally polarised neutrons	258
EJ Bieske, D Wild & PS Weiser	Infrared spectroscopy of anion and cation molecular complexes	260
D Milic, W Lu, M Colla, M Hoogerland, KGH Baldwin & S Buckman	Experiments with a laser manipulated beam of metastable helium atoms	262
GF Metha, G Stewart & M Buntine	Laser ablation studies of transition-metal molecules	264
DC Lau, AI Sidorov, GI Opat, RJ McLean, WJ Rowlands & P Hannaford	A current-carrying magnetic mirror for slowly moving atoms	266
WJ Munro & GJ Milburn	Macroscopic tests of quantum mechanics	268
	<b>Applications V: Gravity Waves</b>	
DE McClelland	Detecting 'Ripples on the cosmic sea'	259
C Walsh, R Bulla, G Davis, D Farrant, A Leistner, F Lesha, B Oreb, E Pavlovic, J Seckold, C Sona & W Stuart	Fabrication and measurement of optics for gravitational wave detectors	261
P Veitch, D Mudge, D Ottaway, J Munch & MW Hamilton	High power lasers for gravitational wave interferometry	265
KG Baigent, MB Gray, D Shaddock, BC Buchler, TC Ralph & DE McClelland	A bench top test of a thermal noise measurement system	267
LR Watkins, SM Tan & TH Barnes	Interferometer profile extraction using wavelets	269
	<b>Quantum &amp; Atom Optics III</b>	
C Foot	Separated-path Ramsey atom interferometer	270
A Eschmann & RJ Ballagh	Ramsey fringes in double Bose-Einstein condensates	272
AS Parkins & HJ Kimble	Quantum state transition between motion and light	274
GM Moy, J Hope & CM Savage	Atom lasers and the Born-Markov approximation	276
	<b>Lasers &amp; Non-Linear Optics IV</b>	
MJ Withford, DJW Brown, RJ Carman, R Mildren & JA Piper	Development of hundred-watt, high-repetition-rate, small-scale copper vapour lasers	271
P Kinsler, K Donovan, P Harrison & RW Kelsall	Terahertz lasers using inter-subband transitions in quantum wells	273
GW Baxter, Y He & BJ Orr	A narrowband pulsed injection-seeded infrared optical parametric oscillator system based on periodically poled lithium niobate	275



P Schlup, S Butterworth & IT McKinnie	Single mode, 1.45-1.59 $\mu\text{m}$ tunable periodically poled lithium niobate optical parametric oscillator	277
	<b>Bose-Einstein Condensation II</b>	
A Wilson	Alchemy with rubidium: Bose-Einstein condensation	278
RJ Ballagh, B Caradoc-Davies & K Burnett	Vortex formation and superfluidity in Bose-Einstein condensates	280
J Ruostekoski, DF Walls & MJ Collett	Quantum coherence and decoherence in Bose-Einstein condensates	282
SA Morgan & K Burnett	Theory of finite temperature excitations in dilute gas Bose condensates	284
	<b>Applications VI: Transmission and Storage</b>	
TH Barnes, ARD Somervell, CY Wu & TG Haskell	Optical encoding/decoding systems for image transmission via fibres	279
C Freund & RP Netterfield	Nanometres to micrometres using ellipsometry	281
D Day & M Gu	Digital three-dimensional optical data storage in a two-photon bleaching polymer using continuous wave illumination	283
CY Wu, ARD Somervell & TH Barnes	A new approach to the direct image transmission through optical fibers	285

\*AOS provides this document as a service to the community, but accepts no responsibility for any errors it might contain.