

Contents

| | page |
|--|------|
| 1. Overview of the SPring-8 Project | 1 |
| 2. Administration | |
| Administration | 3 |
| SPring-8 Users Office | 8 |
| 3. Facilities | |
| 3-1 Accelerators | |
| Accelerator Division - General - | 10 |
| Injector | |
| SPring-8 Linac | 11 |
| Synchrotron | 12 |
| Storage Ring | |
| Magnets, Power Supplies and Alignment | 13 |
| RF System | 16 |
| Vacuum System | 18 |
| Beam Diagnostics | 20 |
| Control System | 23 |
| Beam Dynamics | 24 |
| 3-2 Experimental Facilities | |
| Experimental Facilities - General - | 26 |
| Front Ends | 28 |
| Transport Channel and Optics | 30 |
| The SPring-8 Detector Projects | 33 |
| List of Beamlines | 36 |

Public Beamlines

| | |
|--|----|
| Nuclear Resonant Scattering (BL09XU) | 38 |
| Nuclear Resonant Scattering | 40 |
| Extremely Dense State (BL10XU) | 42 |
| Structural Properties of Extremely Dense Materials | 44 |
| Rapid & Sensitive XAFS Using Tunable X-ray Undulator | 46 |
| Physicochemical Analysis (BL39XU) | 48 |
| X-ray Magnetic Absorption and Scattering | 50 |
| Spectrochemical Analysis | 54 |
| Medical Application | 57 |
| Bio-Crystallography (BL41XU) | 59 |
| Biomacromolecules (Crystal) | 61 |
| Soft X-ray Spectroscopy of Solid (BL25SU) | 63 |
| Soft X-ray Spectroscopy of Solids | 65 |
| Soft X-ray Photochemistry (BL27SU) | 69 |
| Soft X-ray Photochemistry | 71 |
| Soft X-ray CVD | 73 |
| High Energy Inelastic Scattering (BL08W) | 76 |
| Expected Ability of a Compton Scattering Beamline | 78 |
| XAFS (BL01B1) | 80 |
| Broad Energy Band XAFS | 82 |
| Crystal Structure Analysis (BL02B1) | 84 |
| Construction and Preliminary Test of a 7-axes-diffractometer for Structure Analysis Beamline | 86 |
| Chemical Reaction | 88 |
| High-Resolution Powder and Thin Film Diffraction | 90 |
| Diffuse Scattering | 92 |

| | |
|---------------------------------------|-----|
| High Temperature Research (BL04B1) | 94 |
| High Temperature | 96 |
| High Pressure Mineral Physics | 99 |
| JAERI Beamline | 101 |
| RIKEN Beamline | 105 |
| Contract Beamline (Hyogo BL) | 109 |
| 3-3 Safety | 112 |
| 3-4 Information Network System | 114 |
| 3-5 Conventional Facilities | 115 |

4. Activities

4-1 Accelerators

Linac

| | | |
|--|-----------|-----|
| Performance of Electron Gun for SPring-8 Linac | T. ASAKA | 127 |
| New Transport Line for 1GeV Linac | S. SUZUKI | 129 |
| Multi-Channel Correlation Analyzer using Image Process | H. SAKAKI | 131 |
| Automatic RF Conditioning System for SPring-8 Linac | H. SAKAKI | 133 |

Synchrotron

| | | |
|--|-----------|-----|
| Conditioning of RF Cavities for the SPring-8 Synchrotron | H. SUZUKI | 135 |
| Power Supplies for Lattice Magnets of the SPring-8 Synchrotron | K. FUKAMI | 137 |
| Beam Diagnostics for the Commissioning of SPring-8 Synchrotron | T. AOKI | 139 |
| Synchrotron Control System | N. HOSODA | 141 |

| | | |
|---|---------|-----|
| Construction of the Control System for the SPring-8 Synchrotron | N. TANI | 143 |
|---|---------|-----|

Storage Ring

| | | |
|---|--------------|-----|
| Calibration of the Storage Ring Magnets and their Power Supplies | J. OHNISHI | 145 |
| Steering Magnets for the SPring-8 Storage Ring | K. KUMAGAI | 147 |
| Magnet Horizontal Survey before the Storage Ring Commissioning | C. ZHANG | 149 |
| Elevation Changes of the Storage Ring Magnets | S. MATSUI | 151 |
| The Result of the Vibration Measurement for the SPring-8 Storage Ring | K. HASEGAWA | 154 |
| Final Inspection and Test Operation of the SPring-8 SR Main Magnets' Power Supplies | H. TAKEBE | 156 |
| Present status of RF cavity vacuum system | H. EGO | 159 |
| RF Low Power System for the Storage Ring | Y. OHASHI | 161 |
| How to make beam-filling patterns in the storage ring | Y. KAWASHIMA | 164 |
| Computer Control of RF system | T. OHSHIMA | 166 |
| Beam Abort System for The SPring-8 Storage Ring | T. TAKASHIMA | 168 |
| Simulation Study of Single Bunch Instabilities in the SPring-8 Storage Ring | T. NAKAMURA | 170 |
| Possible Methods for Cure of Multi-Bunch Instabilities in the SPring-8 Storage Ring | T. NAKAMURA | 172 |
| Position Measurement of Beam Position Monitor for Magnetic Center of Sextupole | M. MASAKI | 175 |

Others

| | | |
|--|--------------|-----|
| A New Concept for Photon Beam Monitoring | T. KOBAYASHI | 177 |
|--|--------------|-----|

4-2 Experimental Facilities

Insertion Devices

| | | |
|--|--------------|-----|
| Latest Progress of the Development of an In-Vacuum Minipole Undulator | T. TANABE | 178 |
| Rotating Coil / Helmholtz Coil Magnetic Measurement System Using Lock-in Amplifier Method | T. TANABE | 180 |
| Design Status of a Double Array Undulator Control System | Y. HIRAMATSU | 182 |
| Design of Vacuum Chamber at Variably Polarizing Undulator Section | T. BIZEN | 185 |
| Design of Beam Position Monitoring System for a Local Bump Feedback at Variably Polarizing Undulator Section | T. BIZEN | 187 |
| Design of Magnet System for a Local Bump Feedback at Variably Polarizing Undulator Section | T. BIZEN | 189 |

Front Ends

| | | |
|--|--------------|-----|
| Design of a Pre Slit for the SPring-8 Undulator Beamlines (2) | S. TAKAHASHI | 191 |
| Front End XY-Slits for the SPring-8 Undulator Beamlines | M. OURA | 194 |
| Thermomechanical Analysis of Front End XY-Slits for the SPring-8 Undulator Beamlines | M. OURA | 197 |
| Signal Operation System for X-ray Beam Position Monitors | T. KUDO | 200 |
| Present Status of X-ray Beam Position Monitors for ID Beamlines | H. AOYAGI | 202 |
| Present Status of Interlock X-ray Monitors | H. AOYAGI | 204 |

Detectors

| | | |
|---|-------------|-----|
| Development of MicroStrip Gaseous Chamber for Realtime X-ray Imaging Detector | H. TOYOKAWA | 205 |
|---|-------------|-----|

Evaluation of a prototype Imaging Plate reader which utilizes line-shaped laser beam and CCD. Y. KAWANO 208

A Multiple CCD X-ray Detector and its Basic Characterization M. SUZUKI 210

Optics

Bent Crystal Monochromators for High Energy Synchrotron Radiation (II) H. YAMAOKA 213

Ultraprecision Polishing of CVD-SiC Mirrors M. OHMAE 215

Ultraprecision Form Control of Aspheric Mirror with ELID Grinding S. MORIYASU 218

Hard X-ray Focusing by High-Reflectivity Non-Planar Supermirrors Y. KOHMURA 220

X-ray Scattering from Nonideal CZ Silicon Crystals for High Energy Synchrotron Radiation H. YAMAOKA 222

Others

Beamline Control System T. OHATA 225

SPring-8 Insertion Device Control System T. TANABE 228

Standard Components for Transport Channel of SPring-8 Beamlines S. GOTO 230

Alignment of Transport Channel of SPring-8 Beamlines S. GOTO 233

High Speed Interlock System for the SPring-8 Beamline. T. KUDO 235

Construction of SPring-8 Beam line Hutches H. YAMAOKA 237

Present Status of RIKEN Beamline II for Structural Biology (BL44B2) S. ADACHI 239

4-3 Synchrotron Radiation Experiments

Experimental Setup for the Study of Photo-absorption Processes of Multiply Charged Ions M. OURA 241

4-4 Others

| | | |
|---|-----------|-----|
| Present Status of the Information Network System for SPring-8 | H. TAKEBE | 243 |
|---|-----------|-----|

| | | |
|------------------------|---------------------------|-----|
| Overview of New SUBARU | New SUBARU . Project Team | 246 |
|------------------------|---------------------------|-----|

Appendixes

| | | |
|----------------------|--|-----|
| 1. Committees | | 248 |
|----------------------|--|-----|

| | | |
|----------------------------|--|-----|
| 2. Scientific Staff | | 251 |
|----------------------------|--|-----|

| | | |
|---------------------------------------|--|-----|
| 3. List of Symposia and Others | | 253 |
|---------------------------------------|--|-----|

| | | |
|-------------------------------------|--|-----|
| 4. List of Publications 1996 | | 254 |
|-------------------------------------|--|-----|