

TABLE OF CONTENTS

Foreword	v
Conference Programme	viii
INVITED AND CONTRIBUTED PAPERS:	
Multi-Processor Developments in the United States for Future High Energy Physics Experiments and Accelerators <i>I. Gaines et al.</i>	1
Triggers for LEP Experiments <i>S. Falciiano</i>	10
The First and Second Level Trigger for DELPHI <i>S. Quinton et al.</i>	20
Triggering at High Crossing Rate Colliders <i>G. P. Heath</i>	24
Design Automation for SSC Data Acquisition <i>J. J. Thaler</i>	32
A Fastbus-Based Software Trigger for the MARK II Detector at the SLC <i>R. Aleksan et al.</i>	38
From APE to APE-100: Present and Future of the APE Project <i>P. Bacilieri et al.</i>	43
Special Purpose Processors for High Energy Physics <i>G. McPherson</i>	48
The Second Level Trigger of the L3 Experiment <i>Y. Bertsch et al.</i>	56
Multiprocessor Event Filtering at the Heidelberg/Darmstadt Crystal Ball <i>Ch. Ender et al.</i>	61
EVI - A High-Speed Interface between Fastbus and VAX-BI <i>V. Mertens</i>	68
Microprocessor in the LEP Control System <i>P. G. Innocenti</i>	73

Data Acquisition Hardware for the D0 MicroVAX Farm <i>D. Cutts et al.</i>	81
The ALEPH Event-Processor <i>B. Jost</i>	89
A Multiuser Data Acquisition Based on the Macintosh Computer <i>M. Budinich and P. Giannetti</i>	94
The LEP OPAL Event Selection System <i>P. Le Du</i>	99
Multiprocessor Systems in Fastbus <i>A. Marchioro</i>	103
Use of Digital Signal Processors (DSP) in High Energy Physics Experiments <i>D. Crosetto</i>	112
SIROCCO IV - Front End Readout Processor for DELPHI Microvertex <i>N. Bingefors & M. Burns</i>	116
A Parallel Processor Architecture for Image Processing <i>S. Ashokkumar et al.</i>	120
Charged Particle Trigger for the L3 Detector <i>M. Bourquin et al.</i>	124
A Fast Track Trigger Processor for the OPAL Experiment at LEP, CERN <i>M. Bramhall et al.</i>	129
The New UA1 First-Level Trigger Processor <i>N. Bains et al.</i>	134
Why Neural Network? <i>G. Parisi</i>	138
Data Acquisition and Filtering with the ACP Multiprocessor System <i>S. Conetti</i>	140
Applications of Neural Networks and Cellular Automata in Experimental High Energy Physics <i>B. Denby</i>	150
Cellular Automata Machines as Physics Emulators <i>T. Toffoli</i>	154

Use of Optical Data Transmission in HEP <i>P. Cennini et al.</i>	161
The Data Acquisition System for the Crystal Ball at LNS <i>P. Finocchiaro et al.</i>	169
The CERN Host Interface and the Optical Interconnect <i>R. A. McLaren et al.</i>	173
An OPAL 32 Bit Coincidence Array Integrated Circuit <i>M. J. French & F. Slorach</i>	181
Application of Bipolar Cell Array Technology to the Development of a Time Digitizer <i>G. Delavallade et al.</i>	185
The Contiguity Processor - A SIMD Architecture for a 2nd Level Track Trigger <i>G. Darbo & B. W. Heck</i>	199
The Transputer and Occam <i>D. May</i>	205
Recent Experience with Transputer Based Processor Farms <i>J. M. Carter & I. Glendinning</i>	213
A Transputer Based Second-Level Calorimeter Trigger for the ZEUS Experiment <i>H. Boterenbrood et al.</i>	217
The Fermilab Advanced Computer Program Multi-Array Processor System(ACPMAPS). A Site Oriented Supercomputer for Theoretical Physics <i>T. Nash et al.</i>	221
Integrated Microsystems as a Driving Force in Modern Detector Designs <i>H. Spieler</i>	228
VLSI Structures for Track Finding <i>M. Dell'Orso & L. Ristori</i>	239
The UA2 Data Acquisition System <i>G. Blaylock et al.</i>	247
The XOP Trigger Processor Integrated into the UA2 Data Acquisition System <i>P. Baehler et al.</i>	254
SU(3) Lattice Gauge Theory Calculations on T800 Transputer Arrays <i>J. Hoek</i>	260

Trieste Conference on Digital Microelectronics and Microprocessors in Particle Physics - Summary and Concluding Remarks <i>T. Nash</i>	264
POSTER SESSION	
The VAX 11/785 Data Acquisition Facility at the Energy Research Laboratory, Dhahran, Saudi Arabia <i>R. E. Abdel-Aal & H. A. AL-Juwair</i>	269
Fast Data Transfer Processor <i>M. Abdel Meged & W. Gasti</i>	270
An Intelligent Bus Arbitration Timing Controller <i>M. Abdel Meged</i>	271
Communications for DELPHI Online System <i>T. Abye et al.</i>	272
A Special Purpose Processor for Ising Spin Systems and for Digital Image Processing <i>G. R. Aiello et al.</i>	273
Fast Two-Dimensional Electromagnetic Cluster-Finding in the New UA1 First-Level Trigger Processor <i>N. Bains et al.</i>	274
A Fastbus Digital Readout Module for Streamer Tubes <i>F. Beconcini et al.</i>	275
The Energy Sum Processor (E.S.P.) <i>D. Bulfone & L. Lanceri</i>	279
Software Support for the CERN Host Interface <i>D. Burekhardt et al.</i>	280
Transputer T800 Performance in a Fortran Environment <i>G. Cecchet et al.</i>	283
A Fastbus Acquisition System Based on the Fastbus Intersegment Processor and Its Event-Oriented Memory (EDIP) <i>Ph. Charpentier et al.</i>	284
A Fast Zero Suppression Algorithm for the Forward Electromagnetic Calorimeter of DELPHI Implemented on the DSP 56000 <i>D. Crosetto et al.</i>	285
An Acquisition System Based on a Network of Micro VAX's Running the DEC VAXELN Operating System <i>I. D'Antone et al.</i>	286

A Bipolar Cell Array for a nsec Time Digitizer; Design and Performance <i>G. Delavallade et al.</i>	290
A Highly Parallel Algorithm for Track Finding <i>M. Dell'Orso & L. Ristori</i>	292
A Camac Crate Controller as a VSB Device <i>J. Hoffmann & H. Sohlbach</i>	296
A Multiprocessor Based Data Acquisition System for Small and Medium Scale Experiments <i>K. Honscheid et al.</i>	300
Experience with the ACP Multiprocessor Systems in the Fermilab Computing Center <i>C. Kaliher et al.</i>	302
The MEGA Experiment and the Use of Microprocessors for Data Acquisition and Event Selection <i>T. Kozlowski et al.</i>	303
Planned Online Event Reconstruction by 370E Emulators for the OPAL Experiment <i>L. Levinson & R. Yaari</i>	308
A Fast Electronic Trigger and Preanalysis System for the Crystal Ball at LNS <i>C. Maiolino et al.</i>	309
A Simple Microprocessor for Fastbus Slave Modules <i>W. T. Meyer & M. S. Gorbics</i>	310
LEPICS - Parallel Processing in a High Energy Physics Computer Center <i>R. P. Mount</i>	311
Dataflow Computing Technique for Fast Processing <i>S. Sanyal</i>	312
IC Design Using Standard Cell and Macro Cell <i>F. Slorach</i>	313
Intermarriage in Personal Computing Standards <i>B. G. Taylor</i>	314
List of Participants	319
Author Index	329