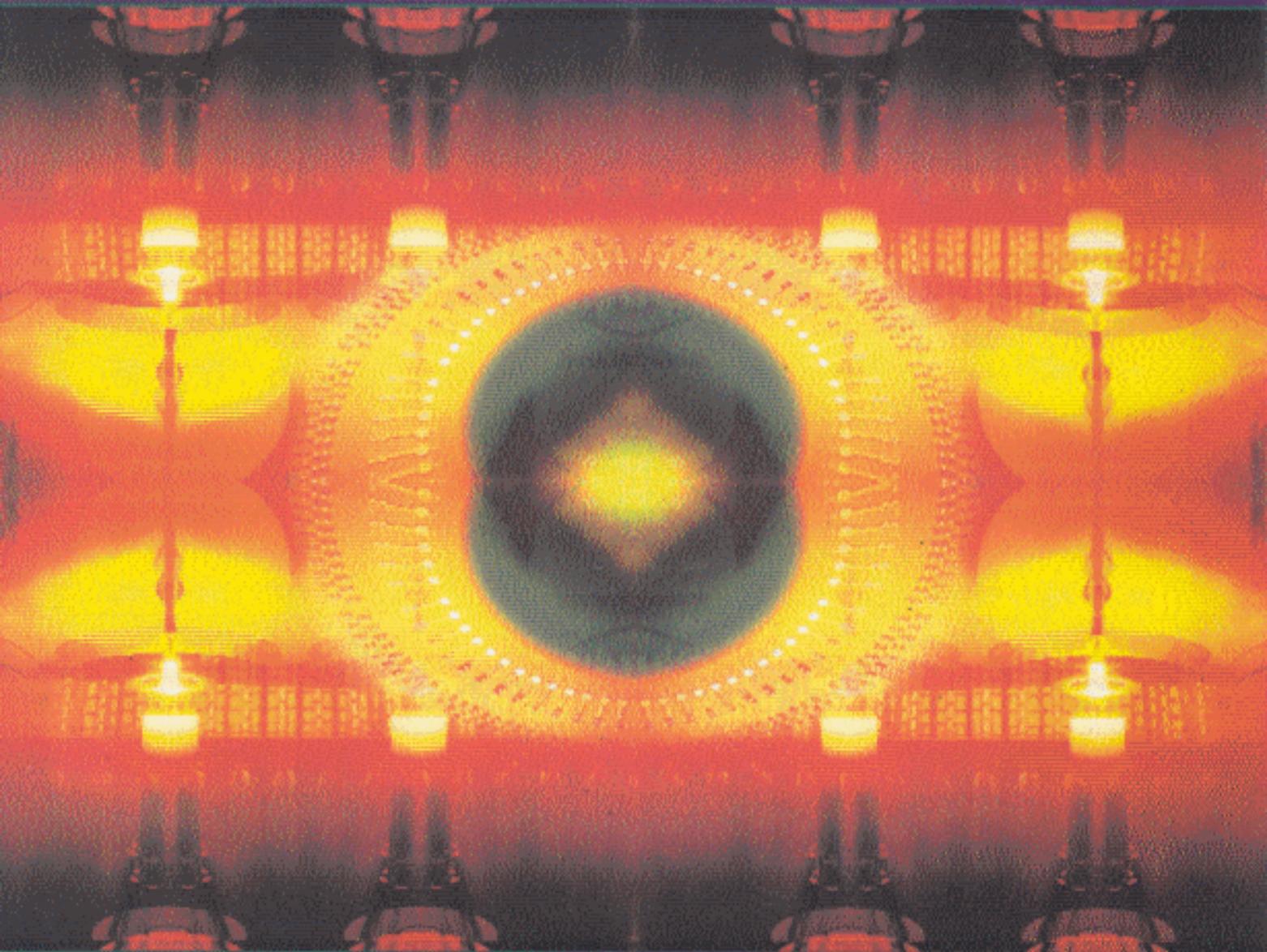


Digital Logic Simulation with CPLD Programming



Steve Waterman

Table of Contents

Lab	Name	Page
Section 1: Asynchronous Circuits		
1.	Logic Gates	1
2.	Boolean Laws, Principles, and Rules	13
3.	Combinational Logic Circuits	33
4.	Implementing Logic Designs	43
5.	Adders	57
6.	Adding and Subtracting	69
7.	Comparators	81
8.	Parity	89
9.	Encoders	97
10.	Decoders	105
11.	Multiplexers	113
12.	Demultiplexers	123
13.	Latches	131
14.	The 555 Timer	141
Section 2: Synchronous Circuits		
15.	Flip-Flops	149
16.	Asynchronous Counters	159
17.	Synchronous Counters	173
18.	Shift Registers	185
19.	Johnson and Ring Counters	197
20.	Tristate Logic	209
21.	The D/A Converter	217
22.	The A/D Converter	231
23.	Memory Addressing	239

24.	Analog Storage	251
25.	Synchronous Data Transceiver	255

Section 3: Library of Parameterized Modules (LPM functions)

26.	LPM_And	265
27.	LPM_Add_Sub	271
28.	LPM_Compare	273
29.	LPM_Decode	277
30.	LPM_Mux	283
31.	LPM_Counter	287
32.	LPM_Shiftreg	295

Section 4: Appendices

Appendix A: How Do I...	301
Appendix B: Error Messages	311
Appendix C: Programming the 7128S	317
Appendix D: Wiring Circuits	319