Robust Fault Detection for VLIW Processors Using Software Based Self Testing

D.Jeyamani Latha[1], P.Hannah Lincy Merlin[2]

Associate Professor, ECE, SCAD College Of Engineering and Technology, Tirunelveli, India[1]
Student, M.E. VLSI Design, SCAD College of Engineering and Technology, Tirunelveli, India [2]

Abstract— VLIW (Very Long Instruction Word) processors are adopted in several products especially for embedded applications. So the problem of testing the processor is important whether it contain any faults or not. So the efficient and optimal test techniques are needed for detecting the faults in functional units of a VLIW processor. Structural Software Based Self Test (SBST) is an effective solution to detect the faults in a processor during the operational life. In structural based SBST the post silicon test validation are used to detect the fault in memory, stuck at faults in ALU (Arithmetic and Logical Unit) of VLIW processor. The automatic generations of efficient test patterns are given to the memory unit and the fault is detected. By introducing the input test into the ALU, the soft errors such as stuck at 0 and stuck at 1 fault are detected. Also the intermittent fault like glitches is detected.

Keywords: VLIW processor, test patterns, software based self test, stuck at fault.