Appendix A

PISCES-MP Simulation Results

This appendix lists the overall runtimes of the PISCES-MP simulations discussed in Chapter 3. An entry of “N.A.” denotes that the data could not be obtained due to resource constraints (usually lack of memory).

Table A.1: iPSC solution times for the PN diode simulation.

	Total Time
4PE	2,921s
8PE	1,612s
16PE	991s
32PE	787s

Table A.2: SP1 solution times for the PN diode simulation.

	Total Time
1PE	5,277s
2PE	2,714s
4PE	1,481s
8PE	825s
16PE	487s

Table A.3: SP2 solution times for the PN diode simulation.

	Total Time
1PE	2,952s
2PE	1,521s
4PE	798s
8PE	431s
16PE	253s
32PE	222s

Table A.4: iPSC solution times for the bipolar transistor simulation.

	Total Time
4PE	13,115s
8PE	7,157s
16PE	4,578s
32PE	3,862s

Table A.5: SP1 solution times for the bipolar transistor simulation.

	Total Time
1PE	20,021s
2PE	10,087s
4PE	5,103s
8PE	2,765s
16PE	1,686s

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Table A.6: SP2 solution times for the bipolar transistor simulation.

	Total Time
1PE	9,822s
2PE	4,937s
4PE	2,503s
8PE	1,314s
16PE	792s
32PE	520s

Table A.7: iPSC solution times for the CMOS inverter simulations.

	2K Grid	8K Grid	11K Grid
1PE	1,480s	N.A.	N.A.
2PE	778s	N.A.	N.A.
4PE	522s	N.A.	N.A.
8PE	372s	2,462s	3,386s
16PE	349s	1,450s	2,781s
32PE	375s	1,394s	2,203s

Table A.8: SP1 solution times for the CMOS inverter simulations.

	2K Grid	8K Grid	11K Grid	18K Grid
1PE	360s	2,742s	4,387s	9,352s
2PE	196s	1,436s	2,279s	4,795s
4PE	130s	827s	1,415s	2,511s
8PE	108s	537s	809s	1,641s
16PE	140s	498s	761s	1,395s

Table A.9: SP2 solution times for the CMOS inverter simulations.

	2K Grid	8K Grid	11K Grid	18K Grid
1PE	228s	1,367s	2,299s	4,751s
2PE	113s	703s	1,186s	2,383s
4PE	74s	460s	631s	1,205s
8PE	61s	281s	420s	830s
16PE	72s	259s	378s	626s
32PE	97s	240s	347s	505s

Table A.10: SP1 solution times for the photo-emitter simulations.

	6K Grid	56K Grid	112K Grid
1PE	10,299s	N.A.	N.A.
2PE	5,331s	N.A.	N.A.
4PE	2,776s	30,842s	N.A.
8PE	1,560s	15,607s	32,960s
16PE	937s	8,044s	17,257s

Table A.11: SP2 solution times for the photo-emitter simulations.

	6K Grid	56K Grid	112K Grid	512K grid
1PE	3,018s	N.A.	N.A.	N.A.
2PE	1,568s	N.A.	N.A.	N.A.
4PE	874s	9,086s	N.A.	N.A.
8PE	497s	4,589s	10,148s	N.A.
16PE	370s	2,378s	5,125s	24,804s
32PE	338s	1,258s	2,624s	12,720s
64PE	N.A.	699s	1,437s	6,875s
128PE	N.A.	N.A.	896s	4,324s