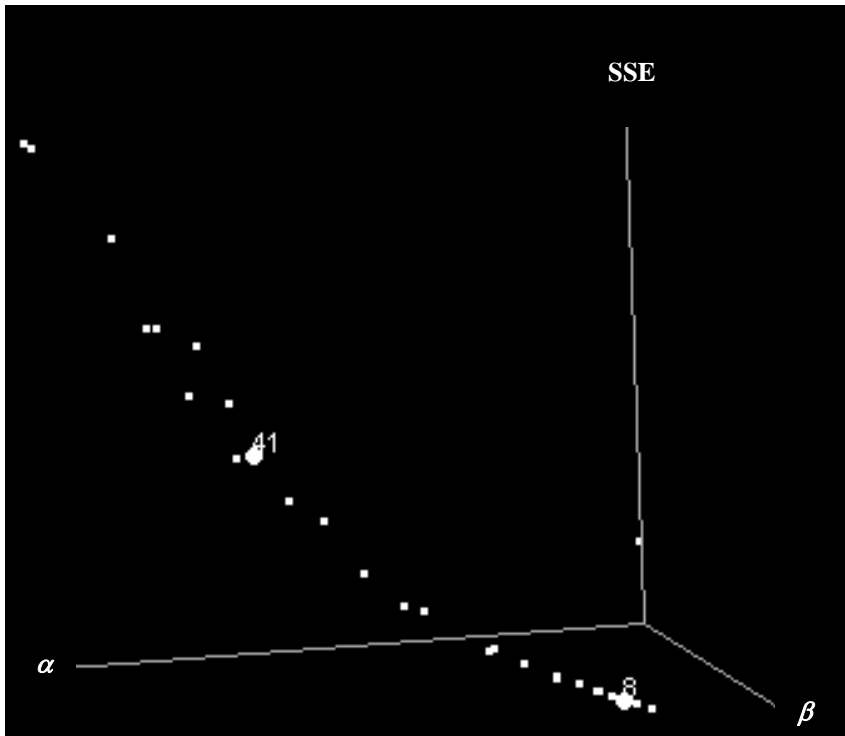


MER 445 SOFT TISSUE MECHANICS

Exponential Constitutive Law: Excel Solver & Local Minima

Shown in the table are the results of Solver iterations for three starting values of α and β and the SSE (sum square of errors) for each iteration. Shown in the plot are the SSE versus α and β . (generating a complete surface would have been very time consuming). The first Solver search began at $\alpha = 0.1$ and $\beta = 16.9307$ and ended at $\alpha = 23.2120$ and $\beta = 16.9307$; this end point is labeled "8" in the table and in the plot. The second began at $\alpha = 100$ and $\beta = 1$ and ended at the same values as the first; this end point is labeled "*" in the table. Other searches (not shown) resulted in the same ending values; therefore, it is assumed with confidence that this represents the global minimum. The third began at $\alpha = 100$ and $\beta = 16.9307$ and ended at $\alpha = 59.3616$ and $\beta = 2.8188$; this end point is labeled "41" in the table and in the plot. This third search resulted in the Solver getting "trapped" in a local minimum.



	α	β	SSE
	0.1000	16.9307	1,767.9397
	20.3360	17.0500	56.3769
	21.4950	18.8426	7.7266
	21.5437	18.8672	7.6912
	22.3927	17.8232	7.6161
	22.9016	17.2577	7.5948
	23.0105	17.1832	7.5838
"8"	23.2120	16.9621	7.5818
	100.0000	1.0000	951.1428
	99.9836	0.5932	213.6633
	72.8658	1.6553	106.7450
	71.6809	1.7043	106.1116
	62.3273	2.4270	82.4330
	61.8869	2.7392	66.1348
	55.1941	3.4074	52.7861
	50.7764	4.0184	47.1974
	46.8562	5.3271	31.7645
	42.1708	6.1909	22.7749
	39.9760	6.7375	21.4911
	33.1963	9.4324	13.3063
	33.8539	9.3733	12.0489
	30.6403	10.9371	10.2007
	27.9292	12.6647	8.9085
	28.0109	12.8102	8.4619
	26.2944	14.0185	8.0313
	25.0620	15.0345	7.8496
	24.8420	15.3861	7.6825
	24.0747	16.0585	7.6162
	23.5484	16.5739	7.5972
	23.4527	16.7185	7.5835
	23.2714	16.8999	7.5818
	23.2372	16.9387	7.5817
*	23.2388	16.9372	7.5817
	100.0000	16.9375	1,188,951.1076
	88.9991	0.0010	1,774.5504
	88.9991	0.9178	165.6946
	88.1140	0.9181	163.8573
	77.2974	1.3181	134.7421
	66.3429	2.0221	100.6149
	67.7827	2.1013	85.2621
"41"	59.3616	2.8188	66.9025