

Supplementary Materials: Modal analysis of the physiologically detailed neurovascular model

Table S1: Natural frequencies in the physiological frequency range of 0.01-0.2 Hz obtained from the modal analysis of the four physiologically detailed tES perturbation pathways

Pathways in columns and different runs with different seeds for the bandpass filtered white noise input in the rows	Pathway 1	Pathway 2	Pathway 3	Pathway 4
Run 1	0.0000, 0.0193	0.0247	0.0052, 0.0157, 0.0265	0.0000, 0.0069, 0.0201
Run 2	0.0189, 0.0201	0.0003, 0.0156, 0.0167	0.0025, 0.0231, 0.0235	0.0128, 0.0141,
Run 3	0.0000, 0.0153, 0.0195	0.0109, 0.0191, 0.0288, 0.0476	0.0027, 0.0081, 0.0196, 0.0236	0.0067, 0.0090, 0.0144
Run 4	0.0115, 0.0245	NaN	0.0050	0.0020, 0.0168
Run 5	0.0007, 0.0077, 0.0200, 0.0276	0.0131	0.0005, 0.0128, 0.0176	0.0192, 0.0318
Run 6	0.0179, 0.0363	0.0237, 0.0418	0.0055	0.0104, 0.0171
Run 7	0.0107, 0.0131	0.0128, 0.0200, 0.0380, 0.0659	0.0036 0.0386	0.0381
Run 8	0.0225, 0.0298	0.0048, 0.0100	0.0011, 0.0209	0.0043, 0.0223
Run 9	0.0000, 0.0215	0.0038, 0.0285	0.0033, 0.0083, 0.0184	0.0099, 0.0164
Run 10	0.0198, 0.0319, 0.0360	0.0189, 0.0229, 0.0242	0.0058,	0.0387

			0.0188	
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Table S2: List of the poles damping parameters associated with linearized model for the four tES perturbation pathways

Pathway	Poles	Damping	Frequency (rad/seconds)	Time constant (seconds)
1	-2.45e-01,	1.00e+00,	2.45e-01,	4.09e+00,
	-4.00e-01,	1.00e+00,	4.00e-01,	2.50e+00,
	-1.00e+00,	1.00e+00,	1.00e+00,	1.00e+00,
	-1.97e+00,	1.00e+00,	1.97e+00,	5.09e-01,
	-3.30e+00,	1.00e+00,	3.30e+00,	3.03e-01,
	-4.90e+00 + 8.44e+00i,	5.02e-01,	9.76e+00,	2.04e-01,
	-4.90e+00 - 8.44e+00i,	5.02e-01,	9.76e+00,	2.04e-01,
	-1.51e+01,	1.00e+00,	1.51e+01,	6.63e-02,
	-2.07e+01,	1.00e+00,	2.07e+01,	4.83e-02,
	-2.97e+04,	1.00e+00,	2.97e+04,	3.36e-05,
	-9.59e+06	1.00e+00,	9.59e+06	1.04e-07
2	-2.45e-01,	1.00e+00,	2.45e-01,	4.09e+00,
	-1.00e+00,	1.00e+00,	1.00e+00,	1.00e+00,
	-1.97e+00,	1.00e+00,	1.97e+00,	5.09e-01,
	-3.30e+00,	1.00e+00,	3.30e+00,	3.03e-01,
	-4.90e+00 + 8.44e+00i,	5.02e-01,	9.76e+00,	2.04e-01,
	-4.90e+00 - 8.44e+00i,	5.02e-01,	9.76e+00,	2.04e-01,
	-1.51e+01,	1.00e+00,	1.51e+01,	6.63e-02,
	-2.07e+01,	1.00e+00,	2.07e+01,	4.83e-02,
	-2.97e+04,	1.00e+00,	2.97e+04,	3.36e-05,
	-9.59e+06	1.00e+00,	9.59e+06	1.04e-07

3	-2.45e-01,	1.00e+00,	2.45e-01,	4.09e+00,
	-1.00e+00,	1.00e+00,	1.00e+00,	1.00e+00,
	-3.30e+00,	1.00e+00,	3.30e+00,	3.03e-01,
	-4.90e+00 + 8.44e+00i,	5.02e-01,	9.76e+00,	2.04e-01,
	-4.90e+00 - 8.44e+00i,	5.02e-01,	9.76e+00,	2.04e-01,
	-2.07e+01,	1.00e+00,	2.07e+01,	4.83e-02,
	-2.97e+04,	1.00e+00,	2.97e+04,	3.36e-05,
	-9.59e+06	1.00e+00,	9.59e+06	1.04e-07
4	-2.45e-01,	1.00e+00,	2.45e-01,	4.09e+00,
	-3.30e+00,	1.00e+00,	3.30e+00,	3.03e-01,
	-4.90e+00 + 8.44e+00i,	5.02e-01,	9.76e+00,	2.04e-01,
	-4.90e+00 - 8.44e+00i,	5.02e-01,	9.76e+00,	2.04e-01,
	-2.07e+01,	1.00e+00,	2.07e+01,	4.83e-02,
	-9.59e+06	1.00e+00,	9.59e+06	1.04e-07