S1 Table – Supplementary tables

Parameter	Symbol	Best fit values			
		Patient 6RON	Patient 4LON	Patient 6ROFF	Patient 4LOFF
I to E weight	w_{IE}	9.764	30.340	21.349	13.131
E to I weight	w_{EI}	12.698	39.455	26.810	10.462
I to I weight	w_{II}	0.318	0.570	0.0986	0.0050
activation function slope	β	5.185	1.360	2.439	3.600
E time constant (s)	Ω_E	0.637	0.382	0.556	0.244
I time constant (s)	Ω_I	0.405	0.243	0.519	0.295
Constant input to E	λ_E	0	0	0	0
Constant input to I	λ_I	0	0	0	0
Noise standard deviation	ζ	0.0612	0.0161	0.131	0.0202

Table A. Best parameters for fits of the linear WC model to patients 6RON, 4LON, 6ROFF, and 4LOFF.

Parameter	Symbol	Best fit values	
		Patient 6ROFF	Patient 4LOFF
I to E weight	w_{IE}	1.215	20.465
E to I weight	w_{EI}	2.118	13.364
I to I weight	w_{II}	1.144	14.558
Scaling parameter	η	4.100	0.481
Steepness parameter	β	4.777	4.464
E time constant (s)	Ω_E	0.0170	0.0099
I time constant (s)	Ω_I	0.165	0.165
Constant input to E	λ_E	2.662	3.578
Constant input to I	λ_I	2.304	0.106
Delay from I to E (s)	Δ_{IE}	0.0039	0.0011
Delay from E to I (s)	Δ_{EI}	0.0005	0.0018
Delay from I to I (s)	Δ_{II}	0.0445	0.0306
Noise standard deviation	ζ	0.0710	0.0063

Table B. Best parameters for fits of the non-linear WC model with delays to patients 6ROFF, and 4LOFF.

Patient		OU	degree 2	degree 3	degree 4	degree 5
1	left	51.30%	77.63%	68.99%	92.55%	95.70%
	right	99.36%				
2	left	86.20%	92.76%	98.80%		
	right	82.90%	98.82%			
3	left	98.11%				
	right	89.15%	94.44%	88.79%	97.61%	
4	left	-4.51%	71.24%	96.61%		
	right	88.45%	84.91%	92.17%	99.33%	
5	left	91.85%	98.21%			
	right	97.34%				
6	left	84.54%	88.21%	80.85%	99.22%	
	right	-116.47%	50.58%	97.76%		
7	left	95.69%				
	right	98.70%				
8	left	92.85%	96.35%			
	right	84.29%	94.85%	97.76%		

Table C. Average burst duration R^2 in envelope model fits, OFF medication. Showing both hemispheres of all patients. Cells highlighted in green correspond to $R^2 > 95\%$.

Patient		OU	degree 2	degree 3	degree 4	degree 5
1	left	74.98%	93.61%	98.61%		
	right	95.98%				
2	left	96.96%				
	right	95.61%				
3	left	99.55%				
	right	97.19%				
4	left	99.05%				
	right	97.65%				
5	left	98.29%				
	right	99.41%				
6	left	92.80%	96.13%			
	right	95.43%				
7	left	88.73%	93.69%	99.60%		
	right	92.41%	97.81%			
8	left	86.87%	85.71%	96.59%		
	right	89.48%	96.48%			

Table D. Average burst duration R^2 in envelope model fits, ON medication. Showing both hemispheres of all patients. Cells highlighted in green correspond to $R^2 > 95\%$.

Patient		OU	degree 2	degree 3	degree 4	degree 5
1	left	-96.1	-103.0	-95.0	-117.8	-121.1
	right	-152.7				
2	left	-108.0	-112.7	-138.8		
	right	-101.5	-138.7			
3	left	-146.2				
	right	-118.2	-123.3	-109.4	-134.1	
4	left	-90.5	-105.6	-137.0		
	right	-117.5	-107.7	-115.4	-154.7	
5	left	-92.0	-110.7			
	right	-107.6				
6	left	-103.7	-102.4	-91.9	-143.1	
	right	-73.3	-91.4	-138.1		
7	left	-125.6				
	right	-142.3				
8	left	-119.3	-124.5			
	right	-102.8	-115.0	-125.6		

Table E. Average burst duration BIC in envelope model fits, OFF medication. Showing both hemispheres of all patients. Models with the lowest BIC for a given patient and hemisphere are highlighted in green.

Patient		OU	degree 2	degree 3	degree 4	degree 5
1	left	-105.3	-120.5	-143.3		
	right	-130.7				
2	left	-136.5				
	right	-132.9				
3	left	-168.9				
	right	-137.5				
4	left	-155.5				
	right	-141.9				
5	left	-147.8				
	right	-162.0				
6	left	-125.0	-129.3			
	right	-132.2				
7	left	-119.0	-122.7	-164.2		
	right	-120.5	-134.8			
8	left	-120.6	-113.7	-133.8		
	right	-115.5	-127.4			

Table F. Average burst duration BIC in envelope model fits, ON medication. Showing both hemispheres of all patients. Models with the lowest BIC for a given patient and hemisphere are highlighted in green.

Parameter	Symbol	Best fit values							
		1LOFF	2LOFF	3LOFF	4LOFF	5LOFF	6LOFF	7LOFF	8LOFF
Coefficient of x^5	d_5	- 10478516.144							
Coefficient of x^4	d_4	1604261.443					- 23.211		
Coefficient of x^3	d_3	- 80454.031	- 120.331		- 5224.078		50.299		
Coefficient of x^2	d_2	1395.819	51.834		574.056	- 4.988	- 31.205		- 55.630
Coefficient of x^1	d_1	- 4.397	- 5.951	- 6.9154	- 20.923	0.118	4.156	- 4.748	0.326
Coefficient of 1	d_0	- 0.0552	0.0957	0.0378	0.204	- 0.00133	0	0.140	- 0.00203
Noise standard deviation	ζ	0.0514	0.0343	0.00671	0.0264	0.0985	0.384	0.0293	0.0498

Table G. Best parameters for minimal envelope model fits to left hemispheres, OFF medication.

Parameter	Symbol	Best fit values							
		1ROFF	2ROFF	3ROFF	4ROFF	5ROFF	6ROFF	7ROFF	8ROFF
Coefficient of x^5	d_5								
Coefficient of x^4	d_4			- 9557.629	- 160402.774				
Coefficient of x^3	d_3			2812.027	23046.149		- 102.404		- 42.415
Coefficient of x^2	d_2		- 13.699	- 218.749	- 957.661		69.085		7.218
Coefficient of x^1	d_1	- 5.200	0.567	2.078	9.195	- 1.942	-15.329	- 4.956	- 2.710
Coefficient of 1	d_0	0.400	- 0.0433	0	0	0.103	0.964	0.203	0.0502
Noise standard deviation	ζ	0.0784	0.137	0.0453	0.0319	0.0356	0.119	0.0429	0.0583

Table H. Best parameters for minimal envelope model fits to right hemispheres, OFF medication.

Parameter	Symbol	Best fit values							
		1LON	2LON	3LON	4LON	5LON	6LON	7LON	8LON
Coefficient of x^5	d_5								
Coefficient of x^4	d_4								
Coefficient of x^3	d_3	- 55.261						- 37.816	- 6855.253
Coefficient of x^2	d_2	32.229					- 26.939	31.788	704.566
Coefficient of x^1	d_1	- 4.980	- 6.198	- 7.353	- 6.825	- 7.302	0.191	- 6.679	- 21.287
Coefficient of 1	d_0	0.0688	0.0774	0.0390	0.0623	0.190	0.0183	0.127	0.157
Noise standard deviation	ζ	0.0447	0.0143	0.00631	0.0106	0.0333	0.147	0.0539	0.0133

Table I. Best parameters for minimal envelope model fits to left hemispheres, ON medication.

Parameter	Symbol	Best fit values							
		1RON	2RON	3RON	4RON	5RON	6RON	7RON	8RON
Coefficient of x^5	d_5								
Coefficient of x^4	d_4								
Coefficient of x^3	d_3								
Coefficient of x^2	d_2							- 40.062	- 61.285
Coefficient of x^1	d_1	- 5.635	- 6.491	- 6.155	- 6.581	- 7.098	- 6.400	0.277	0.574
Coefficient of 1	d_0	0.310	0.187	0.122	0.0995	0.113	0.219	0.000306	- 0.00593
Noise standard deviation	ζ	0.0618	0.0332	0.0221	0.0181	0.0193	0.0398	0.0784	0.0515

Table J. Best parameters for minimal envelope model fits to right hemispheres, ON medication.

Parameter	Symbol	Value
Coefficient of x^5	d_5	-12.67
Coefficient of x^4	d_4	49.73
Coefficient of x^3	d_3	-64.47
Coefficient of x^2	d_2	30.12
Coefficient of x^1	d_1	-3.81
Coefficient of 1	d_0	0
Noise standard deviation	ζ	0.828

Table K. Parameters of the fifth degree polynomial drift used to generate synthetic data to test the passage method.