

Baker membrane negativity creates more gamma



1
00:00:06,410 --> 00:00:03,679
so most of the time you end up with the

2
00:00:08,839 --> 00:00:06,420
meat of the talk at the end when there's

3
00:00:11,180 --> 00:00:08,849
no time left so I put at the beginning

4
00:00:15,470 --> 00:00:11,190
so you got time to digest a little bit

5
00:00:17,120 --> 00:00:15,480
and essentially here there's a couple of

6
00:00:20,029 --> 00:00:17,130
terms that you may not be familiar with

7
00:00:22,310 --> 00:00:20,039
the quantum nesting of rhythms being one

8
00:00:24,109 --> 00:00:22,320
of them during the talk you may want to

9
00:00:26,900 --> 00:00:24,119
pay attention to things about cross

10
00:00:29,419 --> 00:00:26,910
spectral correlation and nesting of

11
00:00:33,520 --> 00:00:29,429
rhythms because this is a key portion of

12
00:00:36,530 --> 00:00:33,530
the model and it also suggests that

13
00:00:39,200 --> 00:00:36,540

there are two entities one being the

14

00:00:41,990 --> 00:00:39,210

mind one being what we typically think

15

00:00:44,900 --> 00:00:42,000

of as the brain and the neural aspect of

16

00:00:46,940 --> 00:00:44,910

the brain and the consciousness here is

17

00:00:53,540 --> 00:00:46,950

an emergent property as opposed to an

18

00:00:57,220 --> 00:00:53,550

entity unto itself and here i will be

19

00:01:01,099 --> 00:00:57,230

using the term the mind for things like

20

00:01:05,030 --> 00:01:01,109

intention attention motivation covert

21

00:01:09,620 --> 00:01:05,040

states not externally behaviorally

22

00:01:13,660 --> 00:01:09,630

observable and these in neurology which

23

00:01:17,359 --> 00:01:13,670

is where i come from basically have a

24

00:01:20,560 --> 00:01:17,369

rich history of being monitored the

25

00:01:23,990 --> 00:01:20,570

ability to intend or attend or

26
00:01:27,200 --> 00:01:24,000
motivational aspects and perceptual set

27
00:01:30,969 --> 00:01:27,210
can all be identified as direct current

28
00:01:33,289 --> 00:01:30,979
field potentials within the the EEG

29
00:01:35,899 --> 00:01:33,299
classically you can go back to the

30
00:01:38,179 --> 00:01:35,909
literature the term right shafts

31
00:01:41,270 --> 00:01:38,189
potential is associated with the

32
00:01:43,340 --> 00:01:41,280
intention to move will show you some

33
00:01:47,780 --> 00:01:43,350
data on this as opposed to just talking

34
00:01:50,480 --> 00:01:47,790
and when we talk about the brain the

35
00:01:52,340 --> 00:01:50,490
neuro brain here I'm going to

36
00:01:54,280 --> 00:01:52,350
specifically refer to neural networks

37
00:01:58,580 --> 00:01:54,290
because that's how the brain works in

38
00:02:03,020 --> 00:01:58,590

distributed networks and here gamma is

39

00:02:03,890 --> 00:02:03,030

an eg frequency that emerges from bound

40

00:02:08,270 --> 00:02:03,900

network

41

00:02:12,350 --> 00:02:08,280

so the gist of the model is that when

42

00:02:15,310 --> 00:02:12,360

the mind which is glial and the neural

43

00:02:18,170 --> 00:02:15,320

networks which you can see as gamma

44

00:02:20,540 --> 00:02:18,180

interact consciousness is the emergent

45

00:02:25,220 --> 00:02:20,550

property now you may think that this is

46

00:02:29,630 --> 00:02:25,230

a wild leap of faith to even discuss

47

00:02:32,960 --> 00:02:29,640

however you'll notice that there's the

48

00:02:36,170 --> 00:02:32,970

FDA that has actually approved a medical

49

00:02:38,660 --> 00:02:36,180

device that's been used for well over a

50

00:02:41,260 --> 00:02:38,670

decade now called the by spectral

51
00:02:45,080 --> 00:02:41,270
monitor that's used to titrate

52
00:02:47,570 --> 00:02:45,090
anesthesia in as of five years ago they

53
00:02:50,120 --> 00:02:47,580
had done over 9 million surgeries where

54
00:02:52,580 --> 00:02:50,130
the anaesthetic was titrated based on

55
00:02:54,980 --> 00:02:52,590
the relationship between DC field

56
00:02:57,530 --> 00:02:54,990
potentials and gamma that's the secret

57
00:03:01,130 --> 00:02:57,540
formula within their little patented box

58
00:03:02,570 --> 00:03:01,140
that you get a little dumb down box it

59
00:03:05,180 --> 00:03:02,580
gives you a number from zero to a

60
00:03:06,830 --> 00:03:05,190
hundred they and you hover them in the

61
00:03:09,710 --> 00:03:06,840
right range and and you have a good

62
00:03:13,280 --> 00:03:09,720
surgical outcome so this this isn't

63
00:03:18,440 --> 00:03:13,290

radical or a wild theory it's actually

64

00:03:22,310 --> 00:03:18,450

the heart of a medical device and when I

65

00:03:25,400 --> 00:03:22,320

talk about gulia being the source of DC

66

00:03:30,199 --> 00:03:25,410

field potentials and gamma emerging from

67

00:03:32,060 --> 00:03:30,209

bound networks this is not my opinion

68

00:03:33,800 --> 00:03:32,070

this is actually the position paper of

69

00:03:36,610 --> 00:03:33,810

the International Federation of clinical

70

00:03:39,560 --> 00:03:36,620

neurophysiology so this isn't a wild

71

00:03:42,620 --> 00:03:39,570

statement either but very well

72

00:03:44,540 --> 00:03:42,630

documented the position paper on EEG

73

00:03:48,620 --> 00:03:44,550

generators was published in nineteen

74

00:03:51,890 --> 00:03:48,630

ninety by a large group headed by stereo

75

00:03:53,330 --> 00:03:51,900

tea who unfortunately has passed but

76
00:03:56,960 --> 00:03:53,340
they haven't reinvented the brain since

77
00:04:01,729 --> 00:03:56,970
1990 so luckily the position paper still

78
00:04:04,090 --> 00:04:01,739
appears to be fairly valid so the DC

79
00:04:10,699 --> 00:04:04,100
field potentials literally can modulate

80
00:04:14,599 --> 00:04:10,709
neural networks you actually can turn on

81
00:04:16,030 --> 00:04:14,609
or off brain areas using the DC field

82
00:04:22,240 --> 00:04:16,040
potentials

83
00:04:24,280 --> 00:04:22,250
control the AC EEG the alternating

84
00:04:27,040 --> 00:04:24,290
currents that you see as the EEG the

85
00:04:29,440 --> 00:04:27,050
oscillatory patterns that we print out

86
00:04:32,020 --> 00:04:29,450
on paper when we still killed trees to

87
00:04:33,940 --> 00:04:32,030
do egees and now it's all digital and

88
00:04:36,510 --> 00:04:33,950

we don't put it on paper typically

89

00:04:38,950 --> 00:04:36,520

unless somebody needs a report and

90

00:04:40,480 --> 00:04:38,960

voluntary control over these direct

91

00:04:43,270 --> 00:04:40,490

current field potentials is well

92

00:04:46,060 --> 00:04:43,280

established you can do neurofeedback

93

00:04:48,460 --> 00:04:46,070

which can be seen as slow cortical

94

00:04:53,080 --> 00:04:48,470

potential training this has been done

95

00:04:55,960 --> 00:04:53,090

since the early 1970s in Europe

96

00:04:57,700 --> 00:04:55,970

typically the United States most of the

97

00:04:59,740 --> 00:04:57,710

neurofeedback people threw away the slow

98

00:05:01,240 --> 00:04:59,750

cortical potentials as an artifact and

99

00:05:03,280 --> 00:05:01,250

in Europe they threw away the

100

00:05:05,620 --> 00:05:03,290

alternating current EEG is an artifact

101
00:05:07,060 --> 00:05:05,630
so and until you actually get both of

102
00:05:11,430 --> 00:05:07,070
those together you don't really see how

103
00:05:14,590 --> 00:05:11,440
the brain works to create consciousness

104
00:05:17,380 --> 00:05:14,600
yoga and that type of an approach

105
00:05:21,820 --> 00:05:17,390
literally can give you voluntary control

106
00:05:23,890 --> 00:05:21,830
over the DC field potentials and I I've

107
00:05:28,750 --> 00:05:23,900
actually published in a MEDLINE listed

108
00:05:30,400 --> 00:05:28,760
journal yogi from Japan who came over

109
00:05:33,880 --> 00:05:30,410
and stuck skewers through his neck and

110
00:05:35,980 --> 00:05:33,890
his tongue experiencing no pain and I

111
00:05:37,930 --> 00:05:35,990
identified the mechanism of turning off

112
00:05:40,210 --> 00:05:37,940
the somatosensory strip using the direct

113
00:05:43,450 --> 00:05:40,220

current field potentials as the trick

114

00:05:47,920 --> 00:05:43,460

that he had learned through decades and

115

00:05:50,530 --> 00:05:47,930

decades and decades of practice and he's

116

00:05:53,650 --> 00:05:50,540

quite good at it it's not a fakir who

117

00:05:56,830 --> 00:05:53,660

does sticks all the time he does this on

118

00:05:59,710 --> 00:05:56,840

rare occasion and I actually show you a

119

00:06:01,150 --> 00:05:59,720

little bit of that and this isn't some

120

00:06:04,870 --> 00:06:01,160

esoteric thing that requires

121

00:06:07,870 --> 00:06:04,880

neurofeedback or extensive yoga training

122

00:06:10,450 --> 00:06:07,880

in order to do when you simply shift

123

00:06:13,600 --> 00:06:10,460

your attention you literally are

124

00:06:16,000 --> 00:06:13,610

shifting your DC field potentials when

125

00:06:19,030 --> 00:06:16,010

you pay attention to your feet and then

126

00:06:21,220 --> 00:06:19,040

your hands and then your face you can

127

00:06:24,250 --> 00:06:21,230

literally track the DC field potentials

128

00:06:26,350 --> 00:06:24,260

from the location the homunculus the

129

00:06:29,620 --> 00:06:26,360

somatosensory strip from the feet to the

130

00:06:32,140 --> 00:06:29,630

hand to the face and I'll show you

131

00:06:35,760 --> 00:06:32,150

a small example of that as well and then

132

00:06:38,980 --> 00:06:35,770

you can also control these exogenously

133

00:06:42,040 --> 00:06:38,990

DC field potentials can be manipulated

134

00:06:43,390 --> 00:06:42,050

using a variety of techniques one of

135

00:06:45,790 --> 00:06:43,400

them that works very nicely as

136

00:06:48,790 --> 00:06:45,800

transcranial direct current stimulation

137

00:06:51,190 --> 00:06:48,800

you can take a 3 volt battery and a

138

00:06:52,960 --> 00:06:51,200

couple of wires and literally modulate

139

00:06:56,110 --> 00:06:52,970

the brain function under the appropriate

140

00:06:58,630 --> 00:06:56,120

electrodes the anode will increase brain

141

00:07:00,580 --> 00:06:58,640

activity it modulates an increase or

142

00:07:04,150 --> 00:07:00,590

decrease of about forty percent in the

143

00:07:07,230 --> 00:07:04,160

the cortical function and essentially

144

00:07:10,840 --> 00:07:07,240

this is shifting the basal membrane DC

145

00:07:13,180 --> 00:07:10,850

negativity and as you enhance the amount

146

00:07:16,210 --> 00:07:13,190

of negativity if you put the anode which

147

00:07:18,130 --> 00:07:16,220

is the + electrode above an area you're

148

00:07:20,560 --> 00:07:18,140

literally increasing the negativity of

149

00:07:22,870 --> 00:07:20,570

the basal membrane and turning on that

150

00:07:27,100 --> 00:07:22,880

brain area enhancing the amount of gamma

151
00:07:28,480 --> 00:07:27,110
and beta content in the area I told you

152
00:07:32,140 --> 00:07:28,490
I'd show you something with attentional

153
00:07:35,380 --> 00:07:32,150
shifts here we we actually have an

154
00:07:37,480 --> 00:07:35,390
example of somebody staring at a dot but

155
00:07:39,970 --> 00:07:37,490
paying attention with the flashlight as

156
00:07:42,370 --> 00:07:39,980
they say of attention to the left

157
00:07:43,420 --> 00:07:42,380
hemifield in the right side of the back

158
00:07:46,240 --> 00:07:43,430
of the head lights up with

159
00:07:48,310 --> 00:07:46,250
electronegativity if you then don't move

160
00:07:50,140 --> 00:07:48,320
the eyes you keep focusing on the dot

161
00:07:52,600 --> 00:07:50,150
but you shift your attention to the

162
00:07:53,680 --> 00:07:52,610
right side it lights up the left side of

163
00:07:56,050 --> 00:07:53,690

the back your head with more

164

00:07:58,360 --> 00:07:56,060

electronegativity so simply shifting

165

00:08:00,130 --> 00:07:58,370

attention but folk keeping your visual

166

00:08:01,870 --> 00:08:00,140

focus on an area but shifting your

167

00:08:03,940 --> 00:08:01,880

attention from one hemifield to the

168

00:08:06,490 --> 00:08:03,950

other can shift the DC negative

169

00:08:11,350 --> 00:08:06,500

potentials within the brain in a very

170

00:08:16,240 --> 00:08:11,360

dramatic dynamic fashion this is calico

171

00:08:17,920 --> 00:08:16,250

me whose Kundalini Yoga expert he's got

172

00:08:21,640 --> 00:08:17,930

a big school of people in Japan that

173

00:08:23,440 --> 00:08:21,650

follow him this was actually him on

174

00:08:26,320 --> 00:08:23,450

stage with his physiology being

175

00:08:29,400 --> 00:08:26,330

projected onto the wall behind him as he

176

00:08:32,290 --> 00:08:29,410

skewered his neck through an out-and-out

177

00:08:34,690 --> 00:08:32,300

kind of up with a barbecue skewer this

178

00:08:36,830 --> 00:08:34,700

was not a sharpened instrument and and

179

00:08:39,680 --> 00:08:36,840

although people who are going

180

00:08:41,690 --> 00:08:39,690

you know when I present this at a

181

00:08:43,190 --> 00:08:41,700

university usually they go yeah well

182

00:08:46,130 --> 00:08:43,200

pierced something important and then

183

00:08:47,600 --> 00:08:46,140

we'll get attention you know so so this

184

00:08:49,790 --> 00:08:47,610

this is really not that dramatic two

185

00:08:51,230 --> 00:08:49,800

younger folks but I can seize people in

186

00:08:56,390 --> 00:08:51,240

the audience you're squirming a little

187

00:08:58,850 --> 00:08:56,400

bit so this is culturally less

188

00:09:01,100 --> 00:08:58,860

appropriate for this grouping and some

189

00:09:05,120 --> 00:09:01,110

at the University where piercings are

190

00:09:09,020 --> 00:09:05,130

not at all uncommon and the this was

191

00:09:11,240 --> 00:09:09,030

actually in hasselt Belgium and the

192

00:09:13,040 --> 00:09:11,250

press was there and they want to make

193

00:09:14,660 --> 00:09:13,050

sure he didn't have a pre pierced tone

194

00:09:17,300 --> 00:09:14,670

so he pulled his tongue out and they

195

00:09:19,760 --> 00:09:17,310

they looked for prior pierce marks and

196

00:09:21,860 --> 00:09:19,770

so forth and it was wasn't there wag his

197

00:09:25,310 --> 00:09:21,870

tongue at the camera you know is really

198

00:09:27,680 --> 00:09:25,320

quite a joker and literally his trick is

199

00:09:29,540 --> 00:09:27,690

to drop the DC negativity towards

200

00:09:32,840 --> 00:09:29,550

electropositive turning off the

201

00:09:34,930 --> 00:09:32,850

alternating current EEG and at that

202

00:09:37,760 --> 00:09:34,940

point he does the stick turns the

203

00:09:39,830 --> 00:09:37,770

somatosensory strip back on because once

204

00:09:43,040 --> 00:09:39,840

it's stuck in it doesn't hurt and he can

205

00:09:44,720 --> 00:09:43,050

sit there and and on stage demonstrate

206

00:09:46,700 --> 00:09:44,730

the fact that he actually had no

207

00:09:49,730 --> 00:09:46,710

experience of pain no change in muscle

208

00:09:51,770 --> 00:09:49,740

tension no electrodermal activity which

209

00:09:53,990 --> 00:09:51,780

electrodermal activity if you you're

210

00:09:56,390 --> 00:09:54,000

familiar with that if you clap your hand

211

00:09:57,980 --> 00:09:56,400

next to somebody or ask them to think