



# Characterization and modeling of primate cortical anatomy and activity

Aitor Morales-Gregorio

Information

Band / Volume 96

ISBN 978-3-95806-698-4

Forschungszentrum Jülich GmbH  
Institute of Neurosciences and Medicine (INM)  
Computational and Systems Neuroscience (INM-6)  
& Theoretical Neuroscience (IAS-6)

# **Characterization and modeling of primate cortical anatomy and activity**

Aitor Morales-Gregorio

Schriften des Forschungszentrums Jülich  
Reihe Information / Information

Band / Volume 96

---

ISSN 1866-1777

ISBN 978-3-95806-698-4

# Contents

ABSTRACT	ii
ZUSAMMENFASSUNG	iii
ACKNOWLEDGEMENTS	iv
<b>I Introduction</b>	<b>I</b>
AIM	3
STRUCTURE OF THIS THESIS	5
BACKGROUND	8
Fundamental principles . . . . .	8
Measures of neuronal activity . . . . .	11
Computational models . . . . .	12
<b>II Publications and manuscripts</b>	<b>17</b>
1 BRAIN ACTIVITY IN THE MACAQUE VISUAL CORTEX	19
2 STATE SPACE ANALYSIS OF VISUAL CORTEX ACTIVITY	37
3 LOGNORMAL DISTRIBUTION OF NEURON DENSITIES	77
4 QUANTIFICATION OF NEURON DENSITY AND WHITE MATTER DISTANCE IN MACAQUE NEOCORTEX	103
5 ACTIVITY-DRIVEN ESTIMATION OF LOCAL CONNECTIVITY	123

<b>III Discussion</b>	<b>163</b>
BRAIN ACTIVITY IN THE MACAQUE VISUAL CORTEX	166
STATE SPACE ANALYSIS OF VISUAL CORTEX ACTIVITY	168
LOGNORMAL DISTRIBUTION OF NEURON DENSITIES	170
QUANTIFICATION OF NEURON DENSITY AND WHITE MATTER DISTANCE IN MACAQUE NEOCORTEX	171
ACTIVITY-DRIVEN ESTIMATION OF LOCAL CONNECTIVITY	172
OUTLOOK	174
<b>IV Appendices</b>	<b>179</b>
A FROM ANATOMY TO MODELS	181
B TRANS-THALAMIC CONNECTIONS	229
<b>References</b>	<b>241</b>
<b>Offizielle Erklärung</b>	<b>242</b>
<b>Publications</b>	<b>243</b>
<b>Author's contribution to publications</b>	<b>245</b>
<b>Author's contribution to open software</b>	<b>248</b>

Information

Band / Volume 96

ISBN 978-3-95806-698-4

Mitglied der Helmholtz-Gemeinschaft

