# Using higher-order interactions for the construction of the functional brain networks.

Tales Carneiro[1], Raphael do Rosário[1], Thaise Toutain[1], Fernando Nóbrega [2], José Garcia [1]

[1] Federal University of Bahia
[2] Dutch Institute for Emergent Phenomena

The human brain is one of the pillars of contemporary multidisciplinary science. In this context, brain activity can be investigated via data collected through electroencephalography (EEG), an accessible and easy-to-perform exam. The standard methodology for studying functional brain behavior in recent decades is network theory; however, the dyadic or pairwise approach dominates investigations that employ this method. This work proposes a new approach by using emerging tools from information theory, as proposed by Faes et al. (2022), which considers the simultaneous interaction between three or more distinct elements in constructing functional brain networks, i.e., higher-order interactions. This approach aims to access interactions that cannot be captured by conventional methodology. To this end, we analyzed EEG data from two groups: healthy individuals and individuals with major depressive disorder. When applying the new approach to analyze the data, we identified significant differences in the distribution of information on the links when comparing the depressive group to the control group. [1, 2, 3]

# References

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