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| **No.** | **Study** | **Measure** | **Results** |
| 1 | (Hornero et al. 2005) | AE | AE increased with signal frequency, amplitude modulation, number of harmonics, lower SNR, stochastic harmonic variability, noise bandwidth, NOT with pure noise power |
| 2 | (M. Aboy et al. 2006) | LZC | LZC increased with signal frequency, amplitude modulation, lower SNR, stochastic harmonic variability, noise bandwidth, NOT with pure noise power or number of harmonics |
| 3 | (Hu, Gao, and Principe 2006) | LZC | LZC decreases with sequence length until saturation in simulations |
| 4 | (Mateo Aboy et al. 2007) | SE | SE increases with lower SNR, with frequency until saturation, decreases with number of harmonics |
| 5 | (Molina-Picó et al. 2011) | AE, SE | AE and SE can increase or decrease when spikes exist in the data depending on whether it is noise or oscillation dominated |
| 6 | (Cirugeda-Roldan et al. 2014) | AE, SE, fuzzy entropy (FE) | Entropy increases with more data excluded but still robust to distinguish between groups even at 50% data loss |
| 7 | (Rivolta et al. 2014) | LZC | LZC decreases with series length in sleep data |
| 8 | (Escudero, Ibáñez-Molina, and Iglesias-Parro 2015) | SE, LZC | Kuramoto model: SE and LZC decrease as connectivity strength k and global synchrony tau increase, but behaviour depends on noise |
| 9 | (Nagaraj and Balasubramanian 2017) | LZC, effort to compress (ETC) | For the logistic map, LZC and ETC slightly increase with time series length |
| 10 | (Amarantidis and Abásolo 2019) | PE, SE, FE | Similar to 1 and 4; also shows PE, SE, and FE depend on colour of the noise and increase for the logistic map and Lorenz system as they transition to chaos. |

**Methodological papers on complexity metrics**

**References**

Aboy, M., R. Hornero, D. Abasolo, and D. Alvarez. 2006. ‘Interpretation of the Lempel-Ziv Complexity Measure in the Context of Biomedical Signal Analysis’. *IEEE Transactions on Biomedical Engineering* 53(11): 2282–88.

Aboy, Mateo, David Cuesta-Frau, Daniel Austin, and Pau Mico-Tormos. 2007. ‘Characterization of Sample Entropy in the Context of Biomedical Signal Analysis’. In *2007 29th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, , 5942–45.

Amarantidis, Lampros Chrysovalantis, and Daniel Abásolo. 2019. ‘Interpretation of Entropy Algorithms in the Context of Biomedical Signal Analysis and Their Application to EEG Analysis in Epilepsy’. *Entropy* 21(9): 840.

Cirugeda-Roldan, Eva, David Cuesta-Frau, Pau Miro-Martinez, and Sandra Oltra-Crespo. 2014. ‘Comparative Study of Entropy Sensitivity to Missing Biosignal Data’. *Entropy* 16(11): 5901–18.

Escudero, Javier, Antonio Ibáñez-Molina, and Sergio Iglesias-Parro. 2015. ‘Effect of the Average Delay and Mean Connectivity of the Kuramoto Model on the Complexity of the Output Electroencephalograms’. In *2015 37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, , 7873–76.

Hornero, R. et al. 2005. ‘Interpretation of Approximate Entropy: Analysis of Intracranial Pressure Approximate Entropy during Acute Intracranial Hypertension’. *IEEE Transactions on Biomedical Engineering* 52(10): 1671–80.

Hu, Jing, Jianbo Gao, and Jose C. Principe. 2006. ‘Analysis of Biomedical Signals by the Lempel-Ziv Complexity: The Effect of Finite Data Size’. *IEEE Transactions on Biomedical Engineering* 53(12): 2606–9.

Molina-Picó, Antonio et al. 2011. ‘Comparative Study of Approximate Entropy and Sample Entropy Robustness to Spikes’. *Artificial Intelligence in Medicine* 53(2): 97–106.

Nagaraj, Nithin, and Karthi Balasubramanian. 2017. ‘Dynamical Complexity of Short and Noisy Time Series’. *The European Physical Journal Special Topics* 226(10): 2191–2204.

Rivolta, Massimo W. et al. 2014. ‘Effects of the Series Length on Lempel-Ziv Complexity during Sleep’. In *2014 36th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, , 693–96.

A picture containing diagram

Description automatically generated

A picture containing graphical user interface

Description automatically generated

Diagram

Description automatically generated with medium confidence

Diagram

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