ADDITIVE MODELS - AN APPLICATION
IN NATURAL SCIENCES

Patrícia Antunes[*1], Sandra S. Ferreira[1,2],
Dário Ferreira[1,2] and João T. Mexia[3]

[1]Center of Mathematics and Applications,
University of Beira Interior, Covilhã

[2]Department of Mathematics,
University of Beira Interior, Covilhã

[3]Center of Mathematics and its Applications,
Faculty of Science and Technology,
New University of Lisbon, Monte da Caparica, Portugal

antunes.patricia03@gmail.com (*corresponding author)
sandraf@ubi.pt, dario@ubi.pt, jtm@fct.unl.pt

Here we will focus on some recent results concerning Additive Models. These models are given by the sum of a fixed term $X\underline{\beta}$ with known matrix X and w random independent terms $X_i\underline{Z}_i, i = 1, ..., w$. The components of the $Z_1, ..., Z_w$ are independent and identical distributed with cumulants $\chi_{i,r}$. We are interested in getting a better understanding of these cumulants and we will estimate them in order to obtain confidence ellipsoids for these models. An application in Natural Sciences is given to illustrate the theory.

References

[1] Khuri, A. I,; Mathew, T.; Sinha, B. K. (1998). *Statistical Tests for Mixed Linear Models*. Wiley Intersciencie Publication, John Wiley & Sons, Inc, New York.

[2] Searle,S. R., Casella, G., McCulloch, C. E. (1992). *Variance Components*. John Wiley & Sons, New York.

[3] Stuart, A. and Ord, J. (1994). *Kendalls Advanced Theory of Statistics*, 6th Ed., Halsted Press, New York.