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# Seminar

## HEAVY-TAILED LONGITUDINAL REGRESSION MODELS FOR CENSORED DATA: A ROBUST PARAMETRIC APPROACH

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**Abstract :** [www.stat.unipd.it/fare-ricerca/seminari](http://www.stat.unipd.it/fare-ricerca/seminari)

# HEAVY-TAILED LONGITUDINAL REGRESSION MODELS FOR CENSORED DATA : A ROBUST PARAMETRIC APPROACH

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Longitudinal HIV-1 RNA viral load measures are often subjected to censoring due to upper and lower detection limits depending on the quantification assays. A complication arises when these continuous measures present a heavy-tailed behavior because inference can be seriously affected by the misspecification of their parametric distribution. For such data structures, we propose a robust nonlinear censored regression model based on the scale mixtures of normal distributions. For taking into account the autocorrelation existing among irregularly observed measures, a damped exponential correlation structure is considered. A stochastic approximation of the EM algorithm is developed to obtain the maximum likelihood estimates of the model parameters. The main advantage of this new procedure allows us to estimate the parameters of interest and evaluate the log-likelihood function in an easy and fast way. Furthermore, the standard errors of the fixed effects and predictions of unobservable values of the response can be obtained as a by-product. The practical utility of the proposed method is exemplified using both simulated and real data.