

PhD program in Statistics

**DSS Statistics Seminar**

**November 24, 2023, 12:00**

**Webinar** <https://uniroma1.zoom.us/j/86881977368?pwd=SWRFcVFjMDZTa0lXZk05TE1zNm5adz09>

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# Circular Local Likelihood regression

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In this talk, we will present a general framework for estimating regression models with circular covariates and a general response. We will start with an overview on nonparametric regression models with circular covariate, revising the main ideas and motivating the need of a more general method. Our goal is to estimate (nonparametrically) a conditional characteristic by maximizing the circular local likelihood. The proposed estimator is shown to be asymptotically normal. The problem of selecting the smoothing parameter is also addressed, as well as bias and variance computation. The finite sample performance of the estimation method in practice is studied through an extensive simulation study, where we cover the cases of Gaussian, Bernoulli, Poisson and Gamma distributed responses. The generality of our approach is illustrated with several real-data examples from different fields. In particular, we will focus on an example of neural response in macaques. This is a joint work with M. Alonso-Pena and I. Gijbels and corresponds to two published papers in *Biometrics* (2023) and *Journal of the American Statistical Association* (2023).



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