

PhD program in Statistics

**DSS Statistics Seminar**

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<https://uniroma1.zoom.us/j/86881977368?pwd=SWRFcVFjMDZTa0lXZk05TE1zNm5adz09>  
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# Central quantile subspace and its applications

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Quantile regression (QR) is becoming increasingly popular due to its relevance in many scientific investigations. There is a great amount of work about linear and nonlinear QR models. Specifically, nonparametric estimation of the conditional quantiles received particular attention, due to its model flexibility. However, nonparametric QR techniques are limited in the number of covariates. Dimension reduction offers a solution to this problem by considering low-dimensional smoothing without specifying any parametric or nonparametric regression relation. The existing dimension reduction techniques focus on the entire conditional distribution. We, on the other hand, turn our attention to dimension reduction techniques for conditional quantiles and introduce a new method for reducing the dimension of the predictor  $X$ . The performance of the methodology is demonstrated through simulation examples and data applications, especially to financial data. Finally, various extensions of the method are presented, such as nonlinear dimension reduction and the use of categorical predictors.



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