

We develop adaptive estimation and inference methods for high-dimensional Gaussian copula regression that achieve the same performance without the knowledge of the marginal transformations as that for high-dimensional linear regression. Using a Kendall's tau based covariance matrix estimator, an l1 regularized estimator is proposed and a corresponding de-biased estimator is developed for the construction of the confidence intervals and hypothesis tests. Theoretical properties of the procedures are studied and the proposed estimation and inference methods are shown to be adaptive to the unknown monotone marginal transformations. Prediction of the response for a given value of the covariates is also considered. The procedures are easy to implement and perform well numerically. The methods are also applied to analyze the Communities and Crime Unnormalized Data from the UCI Machine Learning Repository.