

# High-dimensional consistency of robust precision matrix estimators

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We analyze the statistical consistency of robust estimators for precision matrices in high dimensions. Such estimators, formed by plugging robust covariance matrix estimators into the graphical Lasso/CLIME machinery, were recently proposed by other authors but only studied from the point of view of breakdown behavior. As a complementary result, we provide error bounds for the precision matrix estimators based on various contamination models, revealing the interplay between the dimensionality of the problem and the degree of contamination permitted in the observed distribution. We discuss implications of our work for problems involving graphical model estimation when the uncontaminated data follow a multivariate normal distribution.